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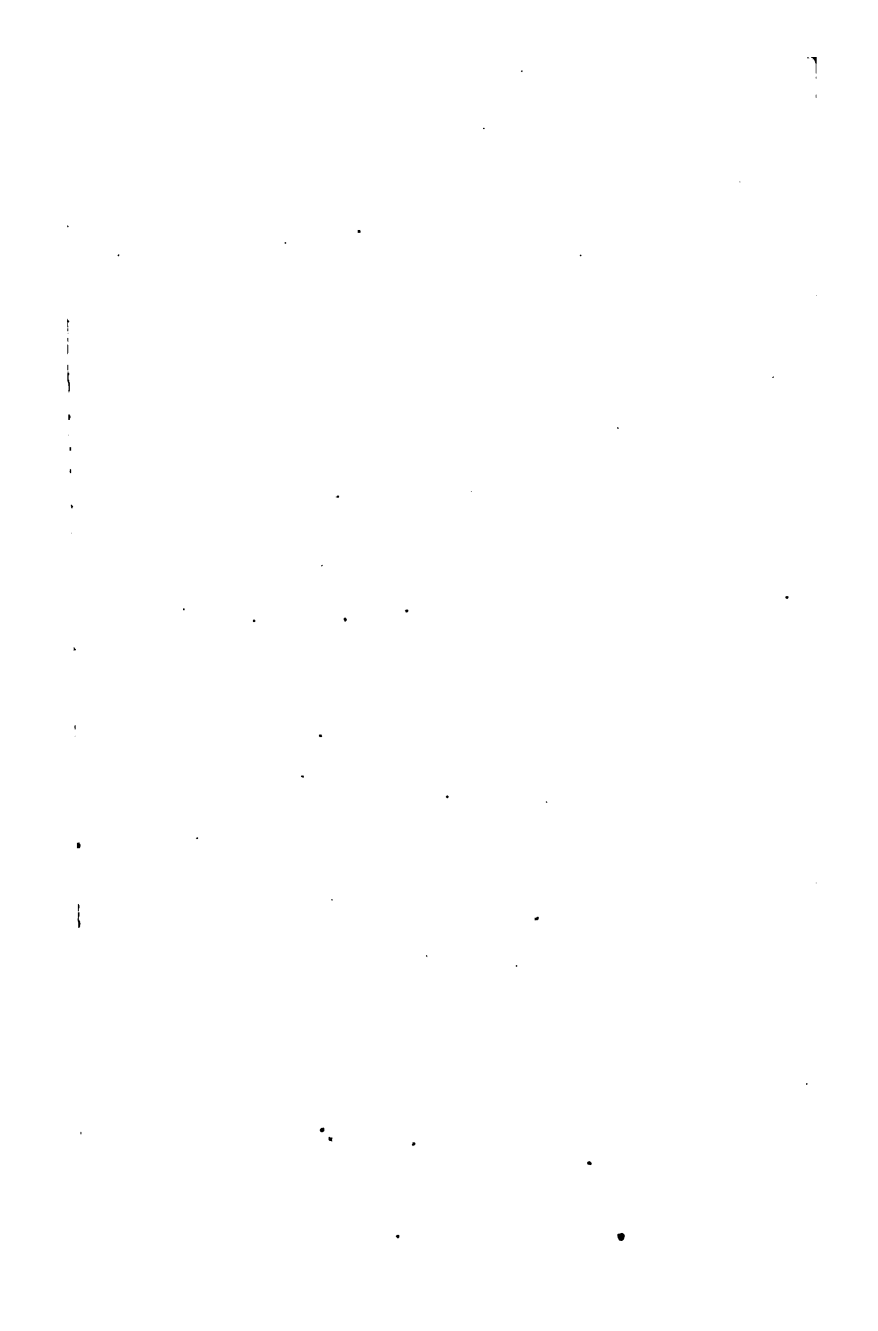
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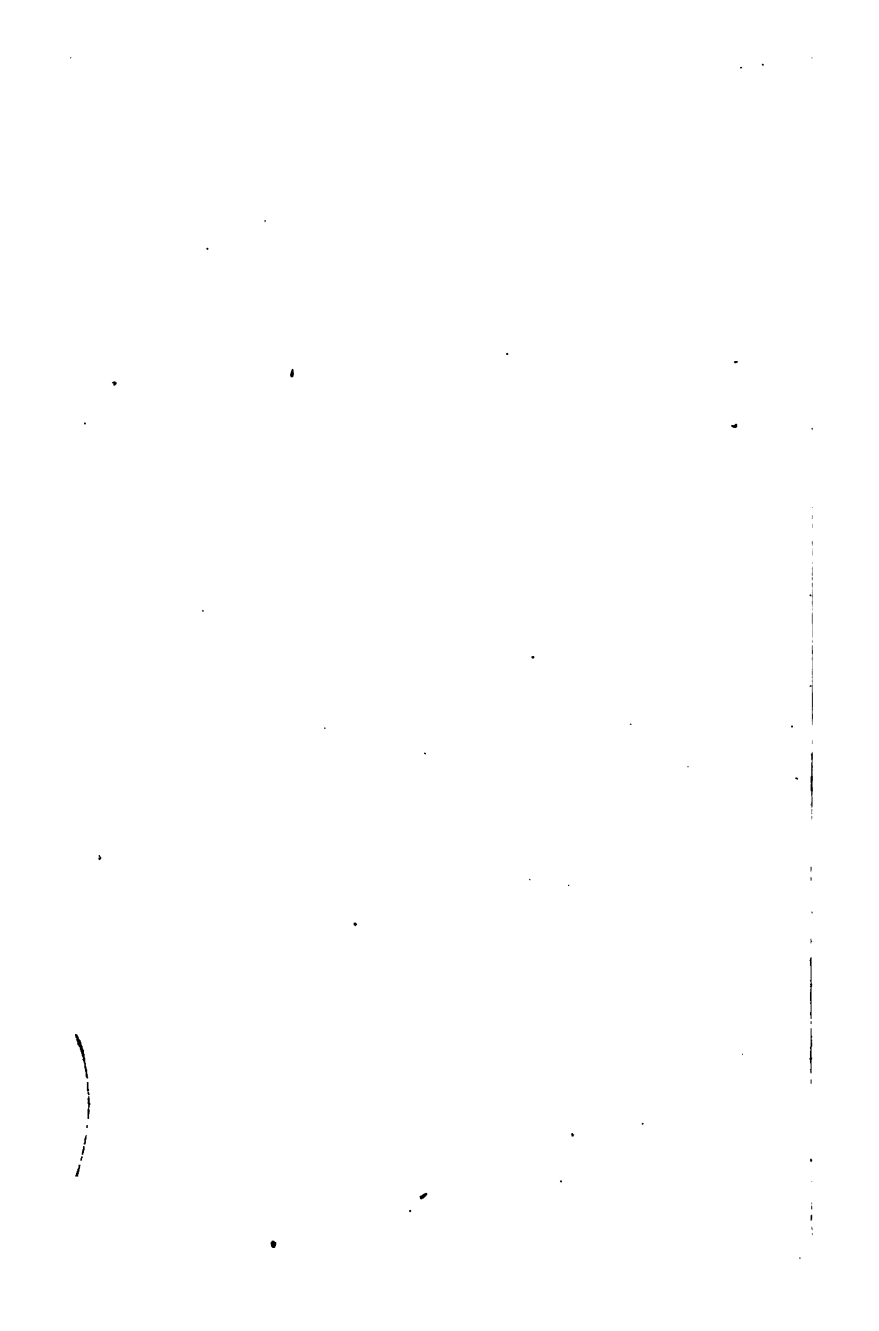
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AN
ETYMOLOGICAL
AND
EXPLANATORY DICTIONARY
OF
THE TERMS AND LANGUAGE
OF
GEOLOGY;

DESIGNED FOR
THE EARLY STUDENT, AND THOSE WHO HAVE NOT MADE
GREAT PROGRESS IN THAT SCIENCE.

BY
GEORGE ROBERTS,
AUTHOR OF "THE HISTORY OF LYME REGIS," AND MASTER OF
A GRAMMAR SCHOOL IN THAT TOWN.

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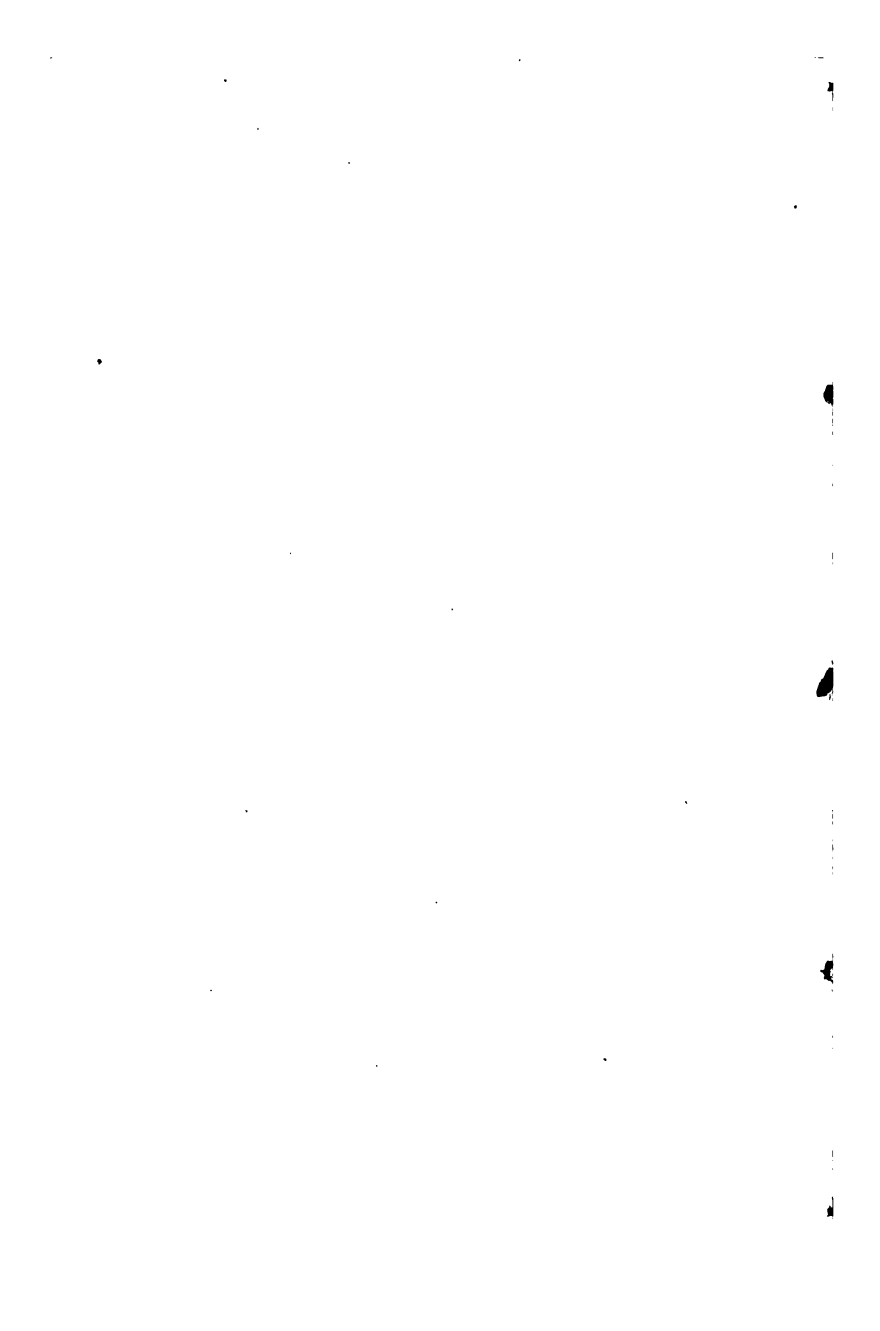
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TO
THOSE GENTLEMEN
WHO HAVE BEEN UNDER HIS CARE,
THIS LITTLE WORK,
AN EARNEST OF HIS DESIRE TO PROMOTE THE
SPREAD OF GENERAL KNOWLEDGE,
IS DEDICATED,
BY
THEIR SINCERE WELL WISHER,
THE AUTHOR.



P R E F A C E.

WITHIN a very inconsiderable period, Geology, the physical history of our globe, and the sister science of Astronomy, has become an object of almost universal attention and very general study by the youth of both sexes. In most books of travels, topography, works of scientific projects, year books, parliamentary reports, &c., the terms and language of Geology appear, sometimes without any, rarely with more than partial explanation. Mr. Lyell, in his admirable work in three volumes, has devoted several pages to a glossary, and the author here begs to acknowledge his obligation to that eminent geologist. Other works contain very brief notices of terms, generally without any etymological explana-

tion. The words alphabetically arranged in this little work were found diffused among many treatises and publications on Geology; they are here brought under one head, and many chemical, botanical, mineralogical, and scientific terms of constant occurrence are added from having been met with in immediate connection with the subject, which is one that is hourly becoming more extended in its views and objects. The advanced geologist would, doubtless, like to find every thing that his science can possibly embrace herein — genus, order, species, class, &c.; or, in other words, would desire a large volume of quite a different character from that which has been the aim of the author. Young persons who are beginning to read and think of Geology, and those who have not kept up their reading on the same head, will find this book useful: many who pretend to no knowledge on the subject whatever, may be glad to refer to an isolated word, which, till explained, renders a whole passage unintelligible. In some parts of France it is believed that an English lad never requires any nautical instruction, that, in fact, he is born a mariner,

and knows, by instinct, the difference between bowlines, bobstays, haulyards, and other ropes. This is not the case any more than that the extensive nomenclature and terms of Geology can be acquired without some attention being paid to them. This is necessary in the present day in order to enter upon theological reading. "The Creation and Geology" form one third of a work in 8vo., entitled "Scriptural Studies," by the Rev. W. H. Tucker, A. M.; which may be cited as a proof that many are confronted by such technical expressions as *transition series*, *igneous rocks*, *oolitic strata*, *heterocercal fishes*, &c., who perhaps little contemplated geological reading, and who are probably not prepared in an etymological view with the means of surmounting these and similar difficulties. The language of Geology has a great advantage over that of Mineralogy. The nomenclature of the latter has been a fertile subject of complaint, as offering no facility either to the acquirement or retention of that branch of knowledge, whereas that of the former does this in an eminent degree. Of the words some are : —

1. Greek; as *hybodus*.
2. Latin; as *mammifer*.
3. Greek and Latin; as { *mammalogy* and
nummulite.*
4. German; as *wacke*.
5. French; as *nacre*.
6. Italian; as *scaglia*.
7. Ancient Saxon; as *brash*.
8. Local terms and corruptions; as *lias*.
9. From the names } *Bucklandi, Bêchei, Mur-*
of discoverers; as } *chisoni, &c.*
10. Named from localities; as { *Paulite, Stron-*
tium.
11. But comparatively } *Uranium, Titanium*.
few fanciful; as }

Some may suppose that an accomplished gentleman has no occasion for this work; but if he is unacquainted with Geology, it will be found there is a knowledge of the subject required besides an acquaintance with the actual derivation of the words. Let us take as an illustration the word *ANTHRACOTHERIUM*.

The possessor of *scholarship*, or *learning*,

* Terms compounded of Greek and Latin words are styled hybrids.

knows at once that this means, by the interpretation of two Greek words, *ανθραξ* and *θηριον*, *coal-beast*. — *Knowledge* is required to correct the impression that this fossil animal is peculiar to the *coal-measures*; which it is not, being found in other formations. — *Memory* is not called on for more than her slightest exercise to retain the plain statement, — that the fossil animal in question, having been, for a time only, found in the lignite or wood-coal of Tuscany, was named anthracotherium, or coal-beast, which term is retained, though geological researches have discovered it in other regions and formations.

The lady geologist, who has but a slight acquaintance with the dead languages, will find the derivation of the words clearly laid down, and the Greek words written out in italics. All the explanations have been written with special regard to *association*, as the great aid to memory. Some readers have probably paid a guinea to a lecturer upon the art of memory, with a special view to the acquirement of and remembering the terms of Botany and Geology. Let those who so paid and were taught to divide the ceiling and sides of the room into

squares for the reception each of them of a term, consider how many sides of rooms would be required, and what long words must sometimes be thrust into a square. Alas! there is no royal road to knowledge! The great Herschel found, at Bath, that he never should make great advances in Astronomy till he had mastered the technicalities. He applied himself for six months exclusively to language, and never regretted, so profitable as it proved, an application of his time and attention. Let no young person, from the facilities afforded in this attempt to promote, in so humble a way, geological studies, be induced to neglect the cultivation of the dead languages, which are the key to the technical terms of all sciences.

The Author presents his little work, designed, he trusts, to prove useful; and begs the indulgence of his readers for the errors which have doubtless crept into it.

*Grammar School,
Lyme Regis, Dorset,
May 13. 1839.*

A TABLE

SHOWING SEVERAL CORRESPONDING WORDS OF
GREEK AND LATIN, IN THE FORM THEY
USUALLY ASSUME IN THE COMPOSITION OF
WORDS.

Latin.	Greek.	
uni	mono	1.
bi	di	2.
tri	tri	3.
quadri	tetra	4.
quinque	penta	5.
sex	hexa	6.
septem	hepta	7.
octo	octo	8.
novem	ennea	9.
decem	deca	10.
undecim	endeca	11.
duodecim	dodeca	12.
viginti	icos	20.
pauci	oligos	few.
plures	pleio	more.
multi	poly	many.
parvus	micros	little.
cauda	ura and urus	tail.
dens, dentis	odous and odon	tooth.
ala	pteron	wing or fin.
pes, pedis	pous, podos	foot.
oculus	ophthalmus	eye.
lapis, lapidis	lithos, lite	stone.
cornu	keras, cerus	horn.
falsus	pseudo	false.
folium	phyllon	leaf.
aqua	hydor, hydro	water.

THE GREEK ALPHABET.

Character.	Name.	Power or Equivalent.
A	α alpha	a
B	β β beta	b
Γ	γ gamma	g
Δ	δ delta	d
E	ϵ epsilon	e short
Z	ζ zeta	z
H	η eta	e long
Θ	θ theta	th
I	ι iota	i
K	κ kappa	k
Λ	λ lambda	l
M	μ mu	m
N	ν nu	n
Ξ	ξ xi	x
O	\omicron omicron	o little
Π	π pi	p
P	ρ rho	r
Σ	σ ς sigma	s
T	τ tau	t
Υ	υ upsilon	u
Φ	ϕ phi	ph
X	χ chi	ch
Ψ	ψ psi	ps
Ω	ω omega	o great

DICTIONARY
OF
THE TERMS AND LANGUAGE
OF
GEOLOGY.

- AALENSIS** (*Aalen* in Wirtemberg); of *Aalen*.
Applied to a loligo or sepia found there.
- ABERTHAW**, in Glamorganshire; famous for blue
lias limestone, the lime of which has the valuable
property, like that of Lyme Regis, of setting in
water.
- ABRADED** (*ab*, from; *rado*, to scrape); worn away
by friction.
- ABRANCHIA** (*a*, *a*, not; *βραγχια*, *branchia*, gills
and organs for breathing under water); *gill-less*.
Cuvier's third order of *Annelidæ*, as the leech.
- ACALEPHÆ** (*ακαληφη*, *acalephe*, a nettle); the third
class of Cuvier's Zoophytes, so named because
many of them cause, when touched, a disagree-
able sensation similar to the sting of a *nettle*.
- ACANTHODES** (*ακανθα*, *acantha*, a spine or thorn);
thorny. A genus of fossil fishes of Agassiz.
- ACANTHONEMUS** (*ακανθα*, *acantha*, a spine or

thorn; *νεμω*, *nemo*, to distribute); *spine-covered*.

A genus of fossil fishes of Agassiz.

ACANTHOPSIS (*ακανθα*, *acantha*, a spine; *οψις*, *opsis*, a face or look); *thorny-face*. A genus of fossil fishes of Agassiz. A species is named *angustus*, or narrow.

ACANTHOPTERYGII (*ακανθα*, *acantha*, a spine or thorn; *πτερυξ*, *pteryx*, a wing or fin); fishes with *spinous* or thorny processes in the dorsal *fins*, with a bony skeleton. One of the grand primary divisions of Cuvier. The sword-fish is an example.

ACEPHALOUS (*α*, *a*, without; *κεφαλη*, *cephale*, the head); *headless creatures*. A division of molluscous animals like the oyster and scallop *without* heads. The Acephala of Cuvier comprehend many genera of animals with bivalve shells, and a few which are devoid of shells.

ACETABULUM (Lat.); a hollow space in which the huckle bone runs. The sucker or cupping glass instrument of some creatures has the same name.

ACICULAR (*acus*, a needle); *needle-like*. Applied to very fine crystals.

ACOTYLEDONOUS (*α*, *a*, not; *κοτυληδων*, *cotyledon*, a seed vessel) plants; having seeds without any cotyledons, or seed vessels. Jussieu's system.

ACRODUS (*ακρος*, *acros*, high; *οδους*, *odous*, a tooth); *high-tooth*. A genus of fossil fishes of the Placoid order, to one species of which, the *A. nobilis*, belong the fossil palates, often called by collectors *Leeches*, from their great resemblance.

ACROGENS (*ακρος*, *acros*, lofty; *γενναω*, *gennao*, to

produce); *tall productions*. A term applied to the arborescent or tree ferns, which are very *lofty*. See the specimen on the stairs of the British Museum.

ACROGNATHUS (*ακρος*, *acros*, high; *γναθος*, *gnathus*, a jaw); *deep jaw*. A genus of fossil fishes of Agassiz, from the chalk: a species is named *boops*, *ox-eye*.

ACTINOCAMAX (*ακτις*, *aktis*, a ray; *καμαξ*, *camax*, a stake); *ray stake*. A name given by Miller to bodies considered by some as Echinital spines, by others as belemnites.

ACTINOCRINITES (*ακτις*, *aktis*, a ray; *κρινω*, *krino*, to perceive); a lily-shaped animal, so called by Miller, from the *radiated* markings of the costal and inter-costal plates, and classed in his third division, seventh genus.

ACTINOLITE (*ακτιν*, *aktin*, a ray of light; *λιθος*, *lithos*, a stone); *ray-stone*. A variety of hornblende of a green colour, so called from the crystals being arranged in the form of *rays*.

ADAMANTINE (*α, α*, not; *δαμαω*, *damao*, to subdue); *not to be broken*, or worn, from its hardness.

ADAPIS (*α, α*, not; *δαπις*, *dapis*, a carpet); *no carpet*. A name given it in allusion to its rough or thorny skin. An extinct species of an extinct genus of pachydermata. It was about three times the size of a hedge-hog, and nearly resembled that animal: it seems, says Prof. Buckland, to have formed a link between the pachydermata (or animals with *thick skins*), and the insectivorous carnivora, or *insect-devouring*

animals, as the ant-eater, &c. It is found in the gypsum of the Paris basin.

ADIPOCIRE (*adeps*, fat; *cera*, wax); a substance apparently intermediate between fat and wax, into which dead animal matter is converted when buried in the earth, and in a certain stage of decomposition.

ADUNCUS (Lat.); *crooked*. A species of the fossil fish *Galeus*.

ÆLONDON (*αιολος*, *aeolos*, varied; *οδων*, *odon*, a tooth); *varied tooth*. The *Æ. priscus* is, says De la Beche, in his Manual, the *Crocodylus priscus* of Sömmering.

ÆROLITES (*αηρ*, *aer*, the air; *λιθος*, *lithos*, a stone); *air stones*, or those which have fallen from the heavens.

AGALMATOLITE (*αγαλμα*, *agalma*, an image; *λιθος*, *lithos*, a stone); *image-stone*. A fine-grained stone from China, much used for the carving of small images.

AGATE (*αχατης*, *achates*, a river in Sicily, now the Drillo, from which, as Theophrastus says, the stone came); a variety of silica, sometimes called *Scotch pebble*, usually found in that variety of the trap rocks called amygdaloid.

AGGREGATED (*aggrego*, *are*, to collect); collected in numbers.

AGNOSTOS (*a*, *a*, not; *γνωστος*, *gnostos*, known); *unknown*. A species of trilobite.

AGNOTHERIUM (*αγνος*, *agnos*, chaste; *θηριον*, *therium*, a beast); an extinct fossil animal allied to the dog, but as large as a lion, found in strata of the miocene period of the tertiary formation.

AIGUILLES (French); *needles*. Pointed granitic rocks.

ALABASTER (*Alabastron*, a town in Egypt, where was a manufactory of ornamental vases from stone found in the mountains by). A carbonate, and likewise a sulphate of lime, is called alabaster. Mary poured upon the head of our Saviour very precious ointment from an alabaster box. There are rocks of alabaster near Minehead, in the north of Somerset, upon which grow several kinds of sea-weed, from which laver is made.

ALBITE (*albus*, white); a variety of felspar in which the alkali is soda.

ALBUM GRÆCUM; the fæces of the hyæna.

ALGA; sea-weed. An order or division of the cryptogamic class of plants.

ALLIACEOUS (*allium*, garlick); *garlick-smelling*. Minerals are said to be *alliaceous*, which, when struck, emit a smell resembling *garlick*.

ALLUVIUM (*alluo*, to wash upon); earth, sand, gravel, stones, and other matter, which has been washed away and thrown down by rivers, floods, or other causes, upon land not permanently submerged beneath the waters of lakes or seas. The French style alluvium *terrains de transport*.

ALUM BAY; a well-known locality in the western part of the Isle of Wight. Lignite beds occur amidst the sands and clays of the eocene tertiary strata, accompanied by iron pyrites. The wood is coniferous.

ALUM-STONE, ALUMEN. Alum, says Mr. Lyell, is the base of pure clay, and strata of clay are often met with containing much iron pyrites.

When the latter substance decomposes, sulphuric acid is produced, which unites with the aluminous earth of the clay to form sulphate of alumine, or common alum. Where manufactories are established for obtaining the alum, the indurated beds of clay are called alum-stone.

ALUMINUM (*alumen*, alum); one of the elementary principles with an earthy base; the base of clay.

ALVEUS (Lat.); the channel of a river.

AMALGAM (*αμα*, *ama*, together; *γαμew*, *gameo*, to marry); a mixture of metals, as quicksilver with gold, &c.

AMBER (*ambra*, an ancient term for this substance); a supposed fossil resin, found on the coast of Prussia and Sicily, and derived from beds of lignite, or fossil wood, in tertiary strata.

AMBLYPTERUS (*αμβλυς*, *amblys*, blunt; *πτερον*, *pteron*, a wing or fin); *blunt-finned*. A genus of fossil fishes of Agassiz.

AMBLYURUS (*αμβλυς*, *amblys*, blunt; *ουρα*, *oura*, a tail); *blunt tail*. A genus of fossil fishes of Agassiz. A species is named *macrostomus*, or *long-mouthed*.

AMETHYST (*α, α*, not; *μεθυσις*, *methysis*, intoxication); a precious stone of a violet colour, which acquired its name from the ancients supposing that, when mixed with spirituous liquors, it *prevented intoxication*.

AMIANTHUS (*α, α*, not; *μαινω*, *miaino*, to pollute); a variety of asbestos, the fibres of which are very *delicate*, and regularly arranged, so as to give the name *unpolluted*, unstained. This is commonly termed *mountain-flax*.

AMMONITE (from a fancied resemblance to the horns on the head of the statue of Jupiter *Ammon*); the shell of an extinct genus of the order of molluscous animals called cephalopoda, allied to the modern genus *Nautilus*. The shell is chambered and curled like a coiled snake. No ammonites are seen in the tertiary, only in the secondary strata. De la Beche has given the names of 173 in the oolite. See Prof. Buckland, *Bridg. Treat.*

AMORPHOUS (*a, a*, not; *μορφη, morphē*, form or shape); *shapeless*. Without any determined shape, as the grains of quartz in the *Grès de Vosges*.

AMPHIBIA (*αμφιβιος, amphibios*, having a double life); animals living on land and in water.

AMPHIBOLE (*αμφιβολος, amphibolos*, equivocal); a name given to hornblende, because it is easily mistaken for augite.

AMPHIBOLIC (*αμφιβολος, amphibolos*, equivocal); a term applied to minerals, as actinolite, &c., from their being easily mistaken for others which nearly resemble them.

AMPHIPODOUS (*αμφι, amphī*, around; *πους, pous*, a foot); *having feet on both sides*. A term applied to crustaceans, as the shrimp.

AMPHISTIUM (*αμφι, amphī*, around; *ιστιον, istion*, a sail); *sail around*. A genus of fossil fishes of Agassiz. A species is named *priscum*, or ancient.

AMYGDALOID (*αμυγδαλα, amygdala*, an almond); a term applied to trap rocks when the embedded nodules, agates, &c., are scattered like *almonds*

in a cake ; also called toad-stone. Amygdaloid is a cellular volcanic rock.

ANALOGUE (*ανα, ana*, throughout ; *λογος, logos*, a discourse) ; any thing strictly conformable to another.

ANALCIME (*α, a*, not ; *αλη, alke*, strength) ; a simple mineral of the Zeolite family, also called cubizite, of frequent occurrence in the trap rocks. It takes its name from the feebleness (*no strength*) of its electricity, which it assumes when heated.

ANCHYLOSED (*αγκυλωσις, ankylosis*, a bending) ; when moveable bones forming joints have become consolidated together, anatomists say they are *anchylosed*. This is caused by a want of *synovia*, the oily fluid secreted at the joints. The first and second cervical vertebræ of the Ichthyosaurus are frequently anchylosed.

ANGUSTIDENS (*angustus*, narrow ; *dens*, a tooth) ; *narrow-toothed*. A species of mastodon.

ANIMALCULA (the Lat. diminutive of *animal*) ; a little animal.

ANNULARIA (*annulus*, a ring) ; genus of fossil plants.

ANNULOSA (*annulus*, a ring) ; ringed creatures, such as *vermes*, or worms.

ANOMALY (*α, a*, not ; *νομος, nomos*, the law or rule) ; a departure from the established rules.

ANOMOPTERIS (*ανομος, anomos*, unusual, strange ; *πτερον, pteron*, a leaf) ; *unusual leaf*. A genus of fossil plants.

ANOPLOTHERIUM (*ανοπλος, anoplos*, unarmed ; *θηριον, therion*, a wild beast) ; the unarmed beast. A fossil extinct quadruped belonging to

the order Pachydermata (thick-skinned), resembling a pig. Having no means of defence in the absence of claws, hoofs, and horns, it is justly called the *unarmed*.

ANTENNÆ (*antenna*, a sail-yard); the feelers of insects, which resemble the *sail-yards* of vessels.

ANTHRACITE (*ανθραξ*, *anthrax*, carbon); a species of stone coal found in Wales, resembling plumbago or black lead. When a vein of any of the igneous rocks has been injected into coal, this substance is found in the neighbourhood of the vein to have been turned into anthracite.

ANTHRACOTHERIUM (*ανθραξ*, *anthrax*, coal; *θηριον*, *therion*, wild beast); *coal beast*. An extinct animal allied to the palæotheria, so named because it was at first only found in the *lignite* or anthracite of Tuscany. It retains its name, though now discovered in other than the *coal measures*.

ANTHROPOMORPHOUS (*ανθρωπος*, *anthropos*, man; *μορφη*, *morphe*, form, shape); resembling the human form.

ANTICLINAL (*αντι*, *anti*, opposite; *κλινω*, *clino*, to incline) line; that from which strata dip on either side. The ridge of a house-top will convey an idea of this line, the slope of the roof representing the dip of the strata. This line, says De la Beche, is often extremely useful in tracing disturbances of strata over a country.

ANTIMONY (*anti-moine*, anti-monk, from having proved fatal to some monks to whom it was given as a medicine); a metal.

ANTISEPTIC (*αντι*, *anti*, against; *σηπω*, *sepo*, to

putrefy) substances ; those which, like common salt, *prevent corruption* in animal and vegetable matter.

ANUROUS (*a, a*, not ; *ουρα, outra*, a tail) ; *tailless*.

There are anurous batrachians, or *tailless* frogs.

APIOCRINITES (*απιον, apion*, a pear ; *κρινω, krino*, to perceive) ; a pear-like lily-shaped animal, so named from its resembling a *pear*, by Miller, who, in his work on the fossil crinoidea, or lily-shaped animals, the link between the ancient vegetable and animal worlds, has ranked it as the first genus of the first division, the articu-
lata.

APODES (*a, a*, not ; *πους, pous*, a foot) ; *footless*.

Cuvier's fourth order of fishes.

APOGON (*a, a*, not ; *πωγων, pogon*, a beard) ; *beardless*. A genus of fossil fishes of Agassiz.

APOPHYLLITE (*απο, apo*, from ; *φυλλον, phyllon*, a leaf) ; a variety of zeolite, and takes its name because it exfoliates (comes off in *leaves*) in acids.

APOPHYSIS or **PROCESS** (*απο, apo*, from ; *φωω, phuo*, to spring : *pro*, forward ; *cedo*, to go) ; projecting parts of vertebræ.

A POSTERIORI (Latin, from a subsequent circumstance). Properly, a demonstration *à posteriori* ; when the cause is inferred from the effect.

A PRIORI (Latin, from a preceding circumstance). Properly, a demonstration *à priori* ; when the effect is proved by referring to the cause.

APTERA (*a, a*, not ; *πτερον, pteron*, a wing) ; *wingless*. Insects without wings, as spiders.

APTERYX AUSTRALIS (*a, a*, not ; *πτερον, pteron*, a

- wing: *australis*, southern); an extraordinary bird of New Zealand, *without wings*, supposed, like the Dodo of Mauritius, to be already extinct. The skins are still worn as ornaments. For a long time none of the missionaries could procure a specimen.
- APTUCHUS** (*a, a*, greatly; *πτυχη*, *ptyche*, a fold); *greatly folded*. A supposed bivalvular operculum, or lid of ammonites, found at Solenhofen. Named by Parkinson, *trigonellites*; by Schlottheim, *solenites*, and, also, *lepadites*.
- ARBORESCENT** (*arboresco*, to grow like a tree); *fern*. One so large as to resemble a tree. See the one on the stairs of the British Museum.
- ARENACEOUS** (*arena*, sand); sandy.
- AREOLÆ** (Latin); little air chambers.
- AREOLATED** (*areola*, a little area or floor); arranged in little beds, or small figures.
- ARGENTIFEROUS** (*argentum*, silver; *fero*, to bear); producing silver. There are argentiferous lead mines at Combe Martin.
- ARGILLACEOUS** (*argilla*, clay); clayey.
- ARKOSE**; an arenaceous rock, which is below the oolite, and comes in contact with granite. So named by M. de Bonnard.
- ARRAGONITE** (Arragon in Spain); a simple mineral. A variety of carbonate of lime, so called from having been first found in Arragon.
- ARTESIAN WELLS** (*Artesium*, Artois); bored as the inhabitants of the province of Artois have been accustomed to do from time immemorial.
- ASAPHUS** (*ασαφες*, *asaphes*, obscure); a genus of trilobites.

ASBESTOS (*a, a*, not; *σβεννω*, *sbennuo*, to extinguish); indestructible by fire. A substance found in veins in serpentine.

ASH, SEDIMENTARY; a term applied to ashes and cinders deposited in beds by the agency of water, after having been ejected from fissures or craters into the sea, prevalent in the Grauwacke group. Trappean ash; this sedimentary ash associated with trap.

ASPHALTUM (*ασφαλτος*, *asphaltus*, a doubtful word, perhaps from *a, a*, not; *σφαλλω*, *sphallo*, to slip, because it adheres to and holds the foot); a variety of bitumen arising from the decomposition of vegetable matter, now becoming famous for its use when prepared for pavements.

ASTACID (*astacus*); an old word for craw-fish.

ASTERACANTHUS (*αστηρ*, *aster*, a star; *ακανθα*, *acantha*, a spine or thorn); *star-spine*. A genus of fossil fishes of Agassiz, of which the ichthyodorulite is found in the Jura limestone.

ASTERIA (*αστηρ*, *aster*, a star); a star-fish.

ASTERODERMUS (*αστηρ*, *aster*, a star; *δερμα*, *derma*, skin); *star-skin*. A genus of fossil fishes of Agassiz. A species is named *platypterus* (*πλατυς*, *platys*, broad; *περον*, *pteron*, a wing or fin); *broad-finned*.

ASTEROPHYLLITES (*αστηρ*, *aster*, a star; *φυλλον*, *phyllon*, a leaf); *star-leaf*. A genus of extinct fossil plants, so called from the *stellated* or star-like disposition of the leaves round the branches.

ATLAS (Atlas of fable); the first vertebra of the back bone.

ATOM (*a, a*, not; *τεμνω, temno*, to cut); the smallest part of any substance, so small that it *cannot be cut*, or again *divided*.

ATTRITION (*ad, to; tero*, to rub); the wearing away by friction.

AUGITE (*αυγη, auge*, lustre); a simple mineral of a dark green or black colour, the constituent part of many volcanic rocks. Probably, says M. de la Beche, only a modification of hornblende. The name was applied by Pliny.

AULOLEPIS (*αυλος, aulos*, a pipe; *λεπις, lepis*, a scale); *pipe-scaled*. See **MACROPOMA**, for the mention of scales studded with hollow *pipes*, or *tubes*. A genus of fossil fishes of Agassiz.

AVALANCHES; fall of snow from the higher to lower parts of mountains. Called, in the dialect of Switzerland, *lavanges*.

AXILLA (an arm-pit); the point whence two branches diverge. In old botanical language, called *ala*.

AZOTE (*a, a*, not; *ζωη, zoe*, life); an elementary principle with an acidifiable base, so called from its being incapable of supporting life. The same as nitrogen.

AZYGOUS (*a, a*, not; *ζυγος, zugos*, connected) bone; the sphenoid, or wedge-like bone.

Adjectives, Nouns, &c., which are of common occurrence in connection with the genera of Conchifera, Radiaria, &c., to distinguish the species.

The names beginning with a capital letter are those of genera. Proper names are too nu-

merous for insertion : they are easily recognised in the familiar *Bechei*, *Bucklandi*, *Colei*, *Lyelli*, *Mantelli*, &c.

- abbreviatus*, a, um *; shortened.
abductus, a, um; removed.
abjectus, a, um; worthless.
abnormis, e †; abnormal, out of the usual order or structure.
abruptus, a, um; abrupt.
acaulis, e; stalkless.
Acardo; without a hinge.
acerosus, a, um; needle-shaped.
acetabulum; concave, depressed, round, with the border a little turned in.
acinaciformis, e; scimitar-shaped.
actinura; star-tailed.
aculeatus, a, um; prickly.
acuminatus, a, um; pointed.
acutirostris, e; sharp-nosed.
acutiusculus, a, um; rather sharp or acute.
aduncatus, a, um; crooked.
aduncus, a, um; crooked.
ægagrapiloides; wild goat's hair like.
æquivalvis, e; equal-valved.
agaracoides; mushroom-like.
agglutinans; glued to, or joined to another.
albo galerus; white hat.
alatus, a, um; winged.
aliformis, e; wing-shaped.

* The terminations *us*, *a*, *um*, of this and similar adjectives, are respectively masculine, feminine, and neuter.

† The termination *is* serves to the masculine and feminine, *e* to the neuter gender.

- alternatus, a, um ; alternating.
 alutaceus, a, um ; tanned.
 alveolaris, e ; hollowed, vaulted.
 ammonoides ; ammonite-like.
 ampliatus, a, um ; enlarged.
 amplus, a, um ; full.
 ampullaceus, a, um ; bottle-shaped.
 Ampullaria ;
 ampullosus, a, um ; } puffed out, flagon-like.
 amygdaloides ; almond-like.
 anastomosus, a, um ; anastomosing, running one
 into another.
 anatinus ; duck-like.
 anceps ; doubtful.
 ancyloides ; shield-like.
 angustifrons ; having a narrow forehead.
 annulatus, a, um ; annular, or ring-shaped.
 Anodonta ; toothless.
 anomalus, a, um ; anomalous, irregular.
 Anomia ; irregular.
 anomolapora ; having unusual pores.
 anserinus, a, um ; goose-like.
 aperturatus, a, um ; full of apertures.
 apicicurvatus, a, um ; curved at the top.
 apiculatus, a, um ; pointletted.
 aquila ; an eagle.
 arachnoides ; cobwebby.
 archetypa ; original.
 arenarius ; sandy.
 areolatus ; areolate, divided into a number of ir-
 regular squares, or angular spaces.
 arcigerens ; arch or bow-bearing.
 arcuarius ; arched.

arcuatus, a, um ; curved.
 arculatus, a, um ; coffer-like.
 arenarius, a, um ; sandy.
 argutus, a, um ; little, pretty.
 armatus, a, um ; armed.
 articulatus, a, um ; closely jointed.
 articulosus, a, um ; jointed.
 asper, a, um ; rough.
 aspergillus ; a brush for sprinkling holy water.
 aspergilliformis, e ; brush-shaped.
 asperrimus, a, um ; roughest, or very rough.
 asperulus, a, um ; roughish.
 astacoides ; lobster-like.
 astrophorus, a, um ; star-bearing, or starred.
 astroides ; star-like.
 auloticon ; pipe-shaped.
 auricula ; an ear.
 auricularis, e ; ear-shaped.
 auriculatus, a, um ; eared.
 auritus, a, um ; long-eared.
 avellana ; filbert.
 aveniformis, e ; oat-pipe-shaped.
 Avicula ; a little bird.
 aviculoides ; Avicula-or bird-shaped.
 axinæformis, e ; axe-shaped.

B

BACULITE (*baculus*, a staff or stick) ; *straight staff*.
 A shell or mollusc, called also a straight ammonite.
BAGSHOT SAND ; the upper part, near *Bagshot*, of the London basin, of the tertiary formation.

BANWELL CAVE, in the Mendip Hills, near the Bristol Channel, in the carboniferous or mountain limestone; where is a large accumulation of the remains of the bear, ox, and stag.

BAROMETER (*βαρος, baros*, weight; *μετρον, metron*, a measure); *weight-measurer*. An instrument to ascertain the weight of the atmosphere, and for calculating the height of mountains. See the tables in De la Bêche's Manual.

BARYUM (*βαρυς, barys*, heavy); one of the elementary principles, with an alkalifiable base.

BASALT (a term used by Pliny, and said to come from *Basal*, an Æthiopian word signifying iron); a dark green or black stone, composed of augite and felspar, very compact in texture, and of considerable hardness, often found in regular pillars of three or more sides called basaltic columns. The Giant's Causeway in Ireland, and at Fingal's Cave in Staffa, are remarkable examples.

Mr. Poulett Scrope has distinguished basalt thus:—

Common basalt, composed of felspar, augite, and iron.

Leucitic basalt, comp. of felspar, augite, and leucite.

Olivine basalt, comp. of olivine, augite, and iron.

Haüyine basalt, comp. of haüyine, augite, and iron.

Ferruginous basalt, when iron is a predominant ingredient.

Augite basalt, when augite composes nearly the whole rock.

BASANITE (*βασανος, basanos*, trial, proof); *proof-stone*, or *touch-stone*. The Lydian stone, once

used for *trying* gold, by a comparison of colours.
See LYDIAN STONE.

BASIN; a geological term applied to deposits lying in a hollow or trough formed of older rocks, sometimes used by geologists almost synonymously with "formations," to express the deposits lying in a certain cavity or depression in older rocks. The "Paris Basin" and "London Basin" are remarkable instances.

BATH or GREAT OOLITE; a well-known member of the oolitic group from 40 to 125 feet thick.
See OOLITE.

BATRACHIAN (*βατραχος, batrachos*, a frog); an animal of the frog tribe. The Hildburghausen sandstone is supposed to retain the footmarks of some gigantic batrachian, or *frog-like* creature.

BEER STONE; an argillaceous and siliceous free-stone dug from quarries at Beer, ten miles west of Lyme Regis, at the passing of the chalk into the green sand.

BETLE STONES; so named in Scotland from their supposed insect origin, and applied by the lapidaries of Edinburgh to make ladies' ornaments; but which are stated by Professor Buckland to be the coprolites or fæces of fishes.

BELEMNITE (*βελεμνον, belemnion*, a dart); locally called *dart-stone*. An extinct genus of the order of molluscous animals called cephalopoda, nearly allied to the recent sepia, having a long, straight, and chambered conical shell. Eighty-eight species have been discovered.

BELEMNOSEPIA (*βελεμνον, belemnion*, a dart; *σηπια, sepia*, cuttle-fish); pens of the cuttle-fish.

BELONOSTOMUS (*βελος*, *belos*, a dart; *στομα*, *stoma*, a mouth); *dart-mouthed*. A genus of fossil fishes of Agassiz.

BELOPTERA (*βελος*, *belos*, a dart; *πτερον*, *pteron*, a wing); *dart-wings*. An intermediate link between the belemnite and the shell or sheath of the *sepia officinalis*.

BERG MEHL (German) *mountain meal*; (French, *farine de montagne*); a substance containing silex, animal matter, and crenic acid, eaten in Lapland in seasons of scarcity, mixed with ground corn and bark, which is found, by Professor Retzius, to contain nineteen species of infusoria.

BERYX; a fossil fish of the etenoïd order, called *John Dory* by the workmen, found in the chalk.

BILIN, in Bohemia; whence comes the polierschiefer, or tripoli.

BINARY (*binarius*, of two) granite; that which is composed of *two* ingredients, as felspar and mica, quartz and felspar, &c.

BISMUTH (German miner's term, *wismuth*); a metal often confounded by the ancients with lead and tin.

BITUMEN (*bitumen*, pitch); *mineral pitch*, of which the tar-like substance which is often seen to ooze out of the Newcastle coal, when on the fire, and which makes it cake, is, as Mr. Lyell says, a good example.

BITUMINOUS SHALE; an argillaceous shale, much impregnated with bitumen, which is very common in the coal measures.

BLENDE (name used by the German miners, from *blenden*, to dazzle); a metallic ore, a compound of

zinc and sulphur. It is often found in brown *shining* crystals (hence the name) in the primary and secondary rocks. It is called *Black Jack* by the Cornish miners.

BLIND COAL; a local name for a kind of anthracite which burns without flame or smoke.

BLOW-WELLS; a local term for Artesian wells, in the eastern coast of Lincolnshire, given them because the water often rushes up violently from the bottom.

BLUFFS (a term used in the United States of North America); high banks presenting a precipitous front to the sea or a river.

BOLE; a provincial term for red ochre.

BOLLENSIS (*Boll*, in Wirtemberg); *of Boll*. Applied to a loligo or sepia found there.

BONE BED, OR BRISTOL BONE BED; a bed of the lias formation, so named from its locality, and from being composed of fragments of teeth and *small bones* in an extraordinary manner. Miss Mary Anning has discovered a portion of the Bristol bone bed, west of Lyme Regis, exhibiting the exact character it assumes at Bristol.

BOOPS (*βοῦς*, *bous*, an ox; *ὄψ*, *ops*, an eye); *ox-eyed*. Applied to a species of acrognathus, *deep-jaw*, a fossil fish of Agassiz.

BOTHRDENDRON (*βοθρος*, *bothros*, a ditch, pit; *δένδρον*, *dendron*, a tree); *pit-tree*. A genus of extinct fossil plants, with the stem not furrowed, but covered with *dots*. The scars of cones obliquely oval.

BOTRYOIDAL (*βοτρύς*, *botrys*, a bunch of grapes); resembling a bunch of grapes.

BOULDERS; a provincial term for large rounded blocks of stone lying on the surface of the ground, or sometimes imbedded in loose soil, different in composition from the rocks in their vicinity, and which have been, therefore, transported from a distance. Boulders are generally styled erratic blocks.

BOVEY HEATHFIELD; a parish in Devonshire, near Teignmouth, where the lignite abounds, which is extensively known as *Bovey coal*. It is fibrous; the vegetable texture very apparent; the colour brown, or brownish black; hence called *brown coal*; and it occurs under several alternating beds of clay and gravel.

BRACHIOFODA (*brachium*, an arm; *πους*, *pous*, a foot); *arm-footed*. Cuvier's fifth class of mollusca, as the *lingula anatina*.

BRACHYPTERUS (*βραχυς*, *brachys*, short; *πυγων*, *pygon*, a cubit; *πτερον*, *pteron*, a fin or wing); *short cubit-finned*. A species of the genus of fossil fishes, the *Dipterus*.

BRACHYUROUS (*βραχυς*, *brachys*, short; *ουρα*, *oura*, a tail); *short-tailed*. A term applied to some of the crustacea, as the crab, to distinguish them from the macrourous, or long-tailed, as the lobster.

BRADFORD CLAY; a member of the oolitic formation, named from a locality near Bath, which, Mr. Lonsdale says, should be united with forest marble.

BRADYPUS (*βραδύς*, *bradys*, slow; *πους*, *pous*, a foot); the scientific name for the sloth, of the order

- tardigrada (or slow-goers). The megalonyx was a colossal bradypus, or sloth.
- BRANCHIÆ (*βραγχία, branchiæ*); the respiratory apparatus of aquatic animals; the gills of a fish. This word often enters into composition, as in gymnobranchia, branchiopodous, &c.
- BRANCHIOPODA (*βραγχία, branchiæ*, gills and organs for breathing under water; *πους, pous*, a foot); *gill-footed*. Having fringed arms or ciliated paddles for feet, combining the functions of respiration and natation.
- BRECCIA (Italian) *breach*. A rock composed of angular fragments connected together by lime or other mineral substance. When the fragments are not angular, but rounded, the mass is named in England "pudding-stone." Osseous breccia (*osseus*, bony) is, as its name implies, composed of bones.
- BREVIROSTRIS (*brevis*, short; *rostrum*, a beak); *short-beak*. A species of pterodactyle.
- BRIAREUS (a giant, to whom fables assigned a hundred arms and fifty bellies); *Briarean*. Applied to a pentacrinites.
- BROMINE (*βρωμος, bromos*, fetid); one of the elementary principles, a supporter of combustion.
- BRORA, in Sutherland; the site of imperfect coal, in the inferior region of the oolite formation.
- BUFONITES (*bufo*, a toad); a term of the old writers on organic remains, for the *round teeth* of the fossil fishes of the genus *GYRODUS*,—which see.
- BUNTER SANDSTEIN (German); *variegated sandstone*. An equivalent to the French *grès bigarré*.
- BURDIE HOUSE; a spot near Edinburgh, where fish, &c. are found in the carboniferous limestone.

Byssus (*βυσσος*, *byssos*, fine flax or cotton); the long, lustrous, and silky fasciculus, or bundle of filaments, by which some of the conchiferous molluscs, muscles, and oysters are moored to submarine rocks.

- baccatus*, a, um; berried.
baccillaris, e; staff-like.
balteatus, a, um; belted.
barbatus, a, um; bearded.
bicalcaratus, a, um; two-spurred.
bicarinatus, a, um; having two keels or ridges.
bicordatus, a, um;
bicorona; double crowned.
bicostalis, e; having two ribs.
bidens; having two teeth.
bidorsatus, a, um; having a double back.
bifasciatus, a, um; doubly banded.
bifrons; doubly fronted.
bilineatus, a, um; two-lined.
binus, a, um; double.
bioculatus, a, um; double eyed.
bipartitus, a, um; bipartite, divided into two.
biplex; double.
bipunctatus, a, um; doubly punctured.
bispinosus, a, um; doubly spined.
bisuffarcinatus, a, um; double stuffed.
botuliformis, e; sausage-shaped.
brevifolium; short leaf.
brevirostris, e; short-jawed.
brevis, e; short.
brevispina; short-spined.
bucardium; ox-heart.

buccineus, a, um; trumpet-like.

buccinoïdea; buccinum-like.

bullatus, a, um; bossed.

byssaceus, a, um; byssaceous, divided into fine pieces like wool.

C

CADMIUM (*καδμεια*, *kadmeia*, a term applied to calamine, and to the volatile matters which rise from the furnace in preparing brass); a metal associated with zinc.

CADUCITY (*caducus*, falling); proneness to fall, as of leaves.

CALAMINE STONE (*lapis calaminaris*, an old term); a carbonate of zinc.

CALAMITES (*calamus*, a reed); a genus of fossil plants allied to equiseta, which abound in the coal formation. A *calamite* is sometimes seven inches, and even fourteen, in diameter.

CALC SINTER (German, *kalk*, lime; *sintern*, to run out by drops); deposits from springs holding carbonate of lime in solution. Petrifying springs.

CALCAIRE GROSSIER (French, *calcaire*, limestone; *grossier*, coarse); an extensive series of strata found in the Paris Basin, belonging to the eocene tertiary period. Tertiary limestone.

CALCAIRE JURASSIQUE, or DE JURA; synonymous with oolite formation.

CALCAREOUS (Lat. *calx*, lime); having the nature of lime. Calcareous rock; limestone rock; calcareous spar; crystallised carbonate of lime.

CALCEDONY (*Calcedon*, a city of Bithynia, from

which it was originally brought, and where it abounds); a siliceous simple mineral, uncrystallised. A variety of agate.

CALCIS (Lat. *calx*, the heel); the bone in the first tarsal row in the *hind* paddle of an ichthyosaurus or plesiosaurus, next the fibula.

CALCIUM; the metallic base of lime.

CALYMENE (*καλυπτω*, *calypto*, to conceal); *occult*. A trilobite, so called from the non-discovery of legs.

CAMBRIAN, OR GRAUWACKE SYSTEM (*Cambria*, the ancient name of Wales); a member of the *transition* series, which include, commencing with the uppermost, the Plynymmon rocks, Bala limestone, and Snowdon rocks or slates. The thickness is probably several thousand yards.

CAMERATED (*camera*, a chamber) shell; a *chambered* shell.

CAMPANULARIÆ (*campanula*, a bell); arborescent corals, with *bell-shaped* cells placed on foot-stalks.

CAPILLARY (*capillus*, hair) crystals; those placed side by side, like *hair* in position, and thus giving rise to a fibrous mass.

CAPSULE (*capsula*, a little chest); seed vessel.

CARANGOPSIS (*καραγξ*, *caranx*, scientific name for the scad, or horse mackarel; *οψις*, *opsis*, look); *scad-like*. A genus of fossil fishes of Agassiz.

CARBON (*carbo*, coal); an undecomposed inflammable substance, one of the simple elementary bodies. Charcoal is almost entirely composed of it. It is also the elementary substance of the diamond.

CARBONATE OF LIME. Lime combines with great avidity with carbonic acid, a gaseous acid only obtained fluid when united with water; and all combinations of it with other substances are called *carbonates*. All limestones are carbonates of lime, and quicklime is obtained by driving off the carbonic acid by heat.

CARBONATED SPRINGS; springs of water containing carbonic acid gas. They are very common, especially in volcanic countries; and sometimes, says Mr. Lyell, contain so much gas, that if a little sugar be thrown into the water, it effervesces like soda water.

CARBONIC ACID GAS (*carbo*, coal); a natural gas which often issues from the ground, especially in volcanic countries. The gas is obtained by the slow burning of charcoal (*carbo*).

CARBONIFEROUS (*carbo*, coal; *fero*, to bear); *bearing coal*. Technically applied to an ancient group of secondary strata.

CARINATUS (*carina*, a keel of a vessel); *keel-shaped*. A species of plesiosaurus.

CARNELIAN (*caro*, genitive *carnis*, flesh); a variety of agate, so called because some kinds are of a *flesh* colour.

CARNIVORA (*caro*, *nis*, flesh; *voro*, to eat); animals which live on flesh.

CARPUS (*καρπος*, *carpos*, the wrist); the carpal bones of an ichthyosaurus, or plesiosaurus, are the two rows of bones or plates beyond the radius and ulna in the fore paddle.

CARYA (*καρυον*, *caryon*, nut); botanical name of a

- genus of American trees, formerly combined with the *juglans*, or true walnut.
- CARYOPHYLLIA (*καρυον, caryon*, nut; *φυλλον, phyllon*, leaf); a genus of corals.
- CASPIANS; masses of salt water included in the dry land; so called from the Caspian Sea, the largest of them.
- CATURA (*κατω, kato*, down; *ουρα, oura*, a tail); *tail inclined downward*. A genus of fossil fishes of Agassiz.
- CAUDAL (*cauda*, a tail); of the tail. As a *caudal* vertebra.
- CAULOPTERIS (*καυλος, caulos*, a stalk; *πτερον, pteron*, a wing); *stalk-wing*. A genus of fossil plants.
- CELESTINE (*cælum*, heaven, the sky); a mineral, so named from its occasional delicate blue colour.
- CENTIGRADE (*centum*, a hundred; *gradus*, step or degree) thermometer; that in which the interval between the freezing and boiling points is divided into one *hundred* degrees; Fahrenheit's has one hundred and eighty degrees in the same space.
- CENTRIFUGAL (*centrum*, the centre; *fugio*, to fly); *centre-flying*. As the power which would carry our earth away into space from the sun, its centre.
- CENTRIPETAL (*centrum*, a centre; *peto*, to seek); *centre-seeking*. As the power which would carry our earth to the sun as a centre.
- CENTROCHIR (*κεντρον, centron*, a goad; *χειρ, cheir*, a hand); *hand-goad*. A species of the genus of fossil fish Cobitis.
- CEPHALASPIS (*κεφαλη, cephale*, a head; *ασπις, aspis*,

a buckler); *buckler-headed*. A genus of fossil fishes of Agassiz.

CERHALOPODA (κεφαλη, *cephale*, head; πους, *pous*, a foot); a class of molluscous animals, whose organs of motion are round the head.

CERHALOTES (κεφαλωτος, *cephalotos*, having a large head); *large-headed*. A species of fossil fish of the genus *Cobitis*.

CERATODUS (κερας, *ceras*, a horn; οδους, *odous*, a tooth); *horny-toothed*. A genus of fossil fish of Agassiz.

CERIUM (*Ceres*, the planet); a metal discovered in 1803.

CETACEA (*cete*, a whale); an order of vertebrated mammiferous animals inhabiting the sea. The whale, dolphin, and narwal are examples.

CHALK (French, *craie*; German, *kreide*; Italian, *scaglia*); a white earthy limestone, composed of lime and carbonic acid, the uppermost of the secondary series of strata. Chalk is considered to have been a precipitate from water holding lime in solution. Dr. Mantell remarks, that the nodules and veins of flint which occur in the chalk show that water holding silex in solution must have been abundant at the cretaceous (chalk) period. The perfect fluidity of the silex or flint, before consolidation, is shown by the sharp impressions which the flints bear of shells and other marine bodies; and sponges, alcyonia, &c. are found enveloped in the nodules. M. De la Bêche estimates the average thickness of the chalk at 700 feet.

CHALICOTHERIUM (χαλιξ, *chalix*, limestone; θηριον,

therium, a wild beast); a genus of extinct fossil animals allied to tapirs, found in strata of the miocene period of the tertiary formation.

CHALYBEATE (χαλυβς, *chalybs*, steel) waters or springs; steel springs, or which contain iron in solution.

CHARACTERISTIC (χαρακτηρ, *character*, a mark) fossil; one peculiar to, or that *marks* a geological formation, as the gryphite does the lias; so that the French and Germans have named lias *calcaire à gryphite* and *gryphiten kalk*. See MONOCHRONIC fossil, which is used in the same sense.

CHATOYANT (French, *chat*, cat); a word expressive of a changeable light in minerals, as seen in the eye of a cat.

CHEIRACANTHUS (χειρ, *cheir*, a hand; ακανθα, *acantha*, a spine); *hand-spine*. A genus of fossil fish of Agassiz. A species is named *Murchisonii*, in compliment to Mr. Murchison.

CHEIROLEPIS (χειρ, *cheir*, a hand; λεπις, *lepis*, a scale); *hand-scale*. A genus of fossil fish of Agassiz.

CHEIROTHERIUM (χειρ, *cheir*, hand; θηριον, *therion*, a beast); a provisional name given by Professor Kaup to the great unknown animal that formed the larger footsteps upon the slabs of sandstone; which, from the resemblance they bear to the human *hand*, have created for the animal the name of *hand-beast*.

CHELONIA (χελωνη, *chelone*, a tortoise); animals of the tortoise kind. Cuvier's first order of reptiles.

- CHERT**; a siliceous mineral, nearly allied to calcedony and flint, but, says Mr. Lyell, less homogeneous and simple in texture. A gradual passage from chert to limestone is not uncommon.
- CHESIL** (German, *pebbles*) Bank; a great pebble beach, so called from Saxon times, between Portland and Abbotsbury.
- CHIMÆRA** (Chimæra of fable); a curious fossil fish of the chalk.
- CHLAMYPHORUS** (*χλαμυς, chlamys*, a cloak; *φερω, fero*, to bear); *cloak-bearer*. An existing animal which lives almost entirely in burrows beneath the surface of sandy regions, and is allied to the armadillo. It derives its name from its *cloak* or cuirass of thick bony plates, like that of the fossil megatherium.
- CHLORINE** (*χλωρος, chloros*, green); an elementary principle, a supporter of combustion.
- CHLORITE SAND** (*χλωρος, chloros*, green); sand coloured green by an admixture of the simple mineral chlorite.
- CHOMATODUS** (*χωμα, choma*, a mound; *οδους, odous*, a tooth); *mound-shaped tooth*. A genus of fossil fishes of Agassiz.
- CHÆROPOTAMUS** (*χοιρος, chæros*, a hog; *ποταμος, potamos*, a river); *river-pig*. A fossil extinct genus of quadrupeds instituted by Cuvier from the analogy of form and dimensions between them and *hogs*. The chæropotamus resembled, but was larger than, the peccaries. Found at Paris and Portland.
- CHONDROPTERYGII** (*χονδρος, chondros*, a cartilage; *πτερυξ, pteryx*, a wing or fin); *cartilaginous*

fishes without a solid bony skeleton. One of the grand primary divisions of Cuvier. The ray is an example.

CHROMIUM (*χρωμα*, *chroma*, a colour); an elementary principle with an acidifiable base, so called from the beautiful *colour* of some of its salts.

CHRYSOPRASE (*χρυσός*, *chryseos*, golden, beautiful; *πρασον*, *prason*, a leek); a rare *leek-green* calcedony found in Silesia, coloured by nickel.

CIDARIS (an ancient Persian cap); one of the genera of the radiaria, or radiated animals, so named from its form.

CILIA (plural of *cilium*, eyelash); *eyelash* or hair-like vibratory organs of many minute creatures.

CILIARY, adjective of *cilia*.

CINNABAR; the name for the red ore of mercury and sulphur from which quicksilver is procured.

CIRRUS (Lat. a tuft of feathers, a fringe); applied as a name to a fossil shell of the chalk.

CLAVICLES (dim. of *clava*, a little tendril of a vine, which binds itself to every thing); the collar bones.

CLEAVAGE. Certain rocks, usually called slate rocks, may be cleaved into an indefinite number of thin laminæ, which are parallel to each other, but which are generally not parallel to the planes of the true strata or layers of deposition. The planes of cleavage, then, are distinguishable from those of stratification; and they also differ from joints, which are fissures or lines of parting,

at definite distances, and often at right angles to the planes of stratification. 'The partings which divide columnar basalt into prisms are joints. The masses of rock included between joints cannot be cleaved into an indefinite number of laminæ or plates, having their planes of cleavage parallel to the joints. (Lyell.)

CLEAVLANDITE (Cleavland); a variety of felspar in which the alkali is soda.

CLINK STONE; sonorous stone; likewise called Phonolite (*φωνη*, *phone*, a voice). It is a felspathic rock of the trap family, usually fissile, and is sonorous when struck with a hammer.

CLUNCH CLAY; a provincial term for indurated chalk marl.

CLYSMIAN (*κλυσμος*, *clysmos*, a deluge); connected with or relating to the deluge.

COBALT (derived, as Dr. Turner says, from *Kobold*, an evil spirit, a term of detraction applied by German miners when ignorant of its value, who considered it unfavourable to the presence of valuable metals); a metal met with chiefly in combination with arsenic.

COBITIS (an ancient name of a particular fish); a genus of fossil fishes of Agassiz. A species is named *centrochir* (*κεντρον*, *centron*, a goad; *χειρ*, *cheir*, a hand).

COCHLIODUS (*κοχλιας*, *cochlias*, a cockle; *οδους*, *odous*, a tooth); *cockle-like tooth*. A genus of fossil fishes of Agassiz. A species is named *acuminatus*, or pointed, and also *C. contortus*, or twisted.

- COCKLE**; a provincial term for masses of stone in which the green sand and chalk are blended.
- COGNATE** (*con*, together; *natus*, born); produced from the same family. *Ex. gr.* a *cognate* shell is one of the same geological formation.
- COLOGNE EARTH**; an earthy and pulverulent mass of lignite, or partially carbonised wood, whose thickness is 50 feet, found near Cologne.
- COLOLITE** (*κολον*, *colon*, intestine; *λιθος*, *lithos*, stone); *intestine-stone*. Petrified intestines of fish, most frequently found in the lithographic limestone. Prof. Agassiz has shown that dead fish in lakes swim with their bellies uppermost until the abdomen bursts, and the bowels come forth. These having been imbedded in mud, became *cololites*. See Prof. Buckland's *Bridgewater Treatise*. These are called *lumbricaria* by Count Munster.
- COLUMBIUM** (*Columbus*, the discoverer of America); a metal so named because it came from America.
- COMATULA** (a diminutive of *coma*, a lock of hair); a genus of extinct animals allied to the crinoïdea, so named by Miller from the resemblance the cluster of auxiliary arms bears to a *lock of hair*.
- COMBE** (Saxon); upper part of a valley in upland villages, beyond the most elevated spring. At the spring head the *valley* ends, the *combe* begins, says Dr. Buckland. In Devonshire, *comb* is used very commonly for valley, and as a termination to names of places — Branscomb, Salcombe, &c.
- COMMUNITE** (*con*, together; *minuo*, to lessen); to break into small parts. The use of the fossil

palatal teeth was to *comminute* putrescent sea weed, crustacea, &c.

COMMINUTED (*con*, together; *minuo*, to lessen); broken in pieces, as sea shells.

CONCENTRIC (*con*, together); having the same centre.

CONCHIFERA (*concha*, a shell; *fero*, to bear); *shell-bearing animals*. Such as have a shell with two valves, as the oyster, scallop, &c. See MOL-LUSCS.

CONCHOÏDAL (*concha*, a shell; *ειδος*, *eidos*, form); shell-like, shelly.

CONCRETION (*con*, together; *cresco*, to grow or increase); an aggregation or uniting of many particles of sand, &c. into one mass.

CONDENSED (*con*, together; *densus*, thick); made more dense by the compression of the particles of matter.

CONDYLE (*κονδυλη*, *condyle*, a projection). When bones are formed to move like hinges on other bones, they are termed *condyles*.

CONFORMABLE (*con*, together; *forma*, form); strata, whose general planes are parallel to each other.

CONGENERS (*con*, together; *genus*, a kind); of one kind; species which belong to one genus.

CONGERIES (Lat.); a heap or pile.

CONGLOMERATE (*con*, together; *glomero*, to heap); rounded water-worn fragments of rock or pebbles, cemented together by another mineral substance, which may be of a siliceous or argillaceous nature. This is locally termed "pudding stone."

CONIFER (*conus*, a cone; *fero*, to bear); *cone-*

bearing, and *coniferae* (fem. plural), a term applied to some extraordinary extinct fossil plants which bore *cones*.

CONTORTED (*con*, together; *torqueo*, to twist) strata; which are twisted and bent. These contortions, De la Bêche says, are sometimes on the large scale in the Alps, where whole mountains are twisted.

COPROLITE (*κοπρος*, *copros*, excrement; *λιθος*, *lithos*, stone); the excrement of the ichthyosaurus, &c. petrified. These were for many years called Bezoar stones, from a fancied resemblance to concretions in the bladder of the Bezoar goat.

CORAL RAG; a provincial term for a member of the oolitic series, a limestone in certain situations containing an abundance of *corals*.

CORIACEOUS (*corium*, a hide); having the nature of leather.

CORIUM (Lat.); a hide, or true skin of pachydermata.

CORN BRASH (*brash*, Saxon, from *brecan*, to break); a local term for a rubbly limestone, forming a soil extensively cultivated in Wiltshire for the growth of *corn*; a member of the oolitic group.

CORN STONE; a local name for a red limestone, forming a subordinate bed in the old red sandstone group.

CORROSION (*con*, together; *rodo, sum*, to gnaw); a wearing away by friction.

CORRUGATION (*con*, together; *ruga*, a wrinkle); a wrinkling up, as of the skin.

CORUNDUM (Indian name), or **ADAMANTINE SPAR**, the hardest substance known except the diamond.

A granular variety is called *emery*. It contains 90 per cent. of alumine; the *sapphire* contains 94 per cent. of the same.

COSMOGONY (*κοσμος, kosmos*, the world; *γονη, gone*, generation): COSMOLOGY (*κοσμος, kosmos, λογος, logos*, discourse). Terms applied to speculations respecting the first origin or mode by which the world was created. See the account of the Institutes of Menù, and of the opinions of Pythagoras, Aristotle, &c., in Lyell's Geology.

COW STONE; a local term for boulders of the green sand.

CRAG; a local term in Norfolk and Suffolk for a deposit, usually of gravel and sand, of the older pliocene period.

CRASSIROSTRIS (*crassus*, thick; *rostrum*, a beak); *thick beak*. A species of pterodactyle.

CRATER (*κρατηρ, crater*, a great cup or bowl); the cup-like cavity at the summit of a volcano, from which the volcanic matter is ejected.

CREPUSCULAR (*crepusculum*, a twilight) habits; such as those of the gecarcinus, or land crab, which comes out by *twilight*.

CRETACEOUS (*creta*, chalk); of chalk.

CRINOIDEA (*κρινον, crinon*, a lily); *lily-shaped animals*, of the radiated division; a link between the animal and vegetable worlds.

CRIOCERATITES (*κριον, crion*, a ram; *κερας, ceras*, a horn); *rams' horns*. A name given to some species of fossil cephalopoda, from the resemblance to *rams' horns*.

CROCODILUS; extinct fossil crocodile, of which there are several species, as the *C. cylindirostris*,

- or cylindrical-jawed ; the *C. brevirostris*, short-jawed crocodile of Mans, &c. The *C. priscus*, or ancient, of Sömmerring, is, says De la Bêche, the *æلودον priscus* of Van Meyer.
- CROP OUT** ; beds or strata are said by miners to crop out when they make their appearance on the surface from beneath others.
- CROP UPWARDS** (miner's term) ; to rise upwards.
- CROW STONE** ; a local term for a sandstone in the Yorkshire and Derbyshire coal fields.
- CRUSTA PETROSA** (Lat. stony crust) ; a name given to a substance which enters into the composition of the teeth of some genera of elephants. Besides the ivory of the interior of the tooth, and the enamel over the external surface, some genera have a third substance, a yellowish opaque ivory, called the *crusta petrosa*. This substance is sometimes called *cæmentum*, or cement.
- CRYSOLITE** (*χρυσος, chrysos*, gold ; *λιθος, lithos*, stone) oriental ; a mineral and precious stone whose base is alumine.
- CRYSTALLINE** ; the internal texture which regular crystals exhibit when broken, or a confused assemblage of ill-defined crystals. Loaf sugar and statuary marble have, says Mr. Lyell, a *crystalline* texture. Sugar candy and calcareous spar are *crystallised*. *Crystalline rocks* are said to be chemically formed, as opposed to mechanically formed.
- CRYSTALS** (*κρυσταλλος, crystallos*, ice) ; a term applied by the Greeks to quartz, which, being met with in rocks in such forms and transparent like

icé, was called *rock crystal*, or rock ice: hence the regular *forms* of other minerals are called crystals, whether they be clear or opaque.

CRYPTOGAMIA (κρυπτος, *cryptos*, hidden; γαμος, *gamos*, marriage); plants of concealed fructification, as mosses, &c.

CTENACANTHUS (κτεις, *cteis*, a comb; ακανθα, *acantha*, a spine or thorn); *comb-spine*. A genus of fossil fishes of Agassiz, of which the ichthyodolites are found in the old red sandstone.

CTENODUS (κτεις, *cteis*, a comb; οδους, *odous*, a tooth); *comb-toothed*. A genus of fossil fishes of Agassiz. A species is named *cristatus*, or crested.

CTENOÏD (κτεις, *cteis*, a comb; ειδος, *eidos*, form); *comb-shaped*.

CTENOÏDIANS (κτεις, *cteis*, a comb); the third order of fossil fishes, according to the classification of Dr. Agassiz, having scales jagged or pectinated like the *tooth* of a comb. These are formed of laminæ of horn or bone, but have no enamel. The perch has scales on this principle.

CTENOPTYCHUS (κτεις, *cteis*, a comb; πτυχος, *ptychos*, folded); *comb-folded*. A genus of fossil fishes of Agassiz. There are the *C. apicalis*, *pectinalis*, and *denticulatus*.

CUBICODON (κυβικος, *cubicos*, cubical; οδων, *odon*, a tooth); *cubical-tooth*. A species of the *Phytosaurus*.

CUBOÏD (κυβος, *cubos*, a cube; ειδος, *eidos*, form) bone; *cube-like*. The middle bone of the first tarsal row in the *hind* paddle of an ichthyosaurus or plesiosaurus, between the calcis and scaphoid plates or bones.

- CUMBRIAN** (Cumbria, the ancient name for Cumberland) rocks; those of Cumberland.
- CUNEIFORM** (*cuneus*, a wedge; *forma*, form); *wedge-shaped*. A name given to the three bones or plates of the second tarsal row in the hind paddles of an ichthyosaurus or plesiosaurus, which are distinguished as middle, internal, and external cuneiform bones.
- CUPID'S WING**; a crystallisation found in the blue lias.
- CURTOCERUS** (*κυρτος*, *curtos*, bent; *κερας*, *ceras*, horn); *bent-horn*. Applied to a species of fossil cervus, or stag.
- CUTICULAR** (*cutis*, the skin); relating to the skin. The *cuticular* expansions of mollusca.
- CYATHOCRINITES** (*κυαθος*, *cyathos*, a cup; *κρινω*, *krino*, to perceive); a *cup*-like lily-shaped animal placed by Miller in his third division, sixth genus.
- CYCADEÆ** (*κυκας*, *cycas*, a palm — a name given by Theophrastus the naturalist); an order of plants, natives of warm climates. They have a short stem, surmounted by a peculiar foliage, termed pinnated fronds by botanists, which spread in a circle.
- CYCLARTHURUS** (*κυκλος*, *cyclos*, a circle; *αρθρον*, *arthron*, a joint); *circular-joint*. A genus of fossil fishes of Agassiz. A species is named *macropterus* (*μακρος*, *macros*, long; *πτερον*, *pteron*, a fin); *long-finned*.
- CYCLOÏD** (*κυκλος*, *cyclos*, a circle); circular.
- CYCLOÏDIANS** (*κυκλος*, *cyclos*, a circle); the fourth order of fishes, according to Dr. Agassiz's classifi-

cation, having their scales smooth, and simple at their margin. These are formed of laminæ of horn or bone, but have no enamel. The herring and salmon are examples of this order.

CYCLOPHTHALMUS (κυκλος, *cyclos*, a circle; οφθαλμος, *ophthalmos*, an eye); *circular-eyed*. Applied to a fossil scorpion.

CYCLOPOMA (κυκλος, *cyclos*, circular; πωμα, *poma*, a lid or cover of the gills); having a circular *lid of the gills*. A genus of fossil fish of Agassiz.

CYCLOPTERIS (κυκλος, *cyclos*, a circle; πτερον, *pteron*, a wing); a genus of fossil plants so named by Brongniart from the *leaves* being *circular*.

CYCLOSTOMI (κυκλος, *cyclos*, a circle; στομα, *stoma*, a mouth); Cuvier's ninth order of cartilaginous fishes, which have *circular mouths*, as the lamprey.

CYLINDRICODON (κυλινδρικός, *cylindricos*, cylindrical; οδων, *odon*, a tooth); *cylindrical tooth*. A species of the Phytosaurus.

CYNOCEPHALUS (κυων, genitive κυνος, *cynos*, a dog; κεφαλη, *cephale*, a head); *dog-headed*. The scientific name of a species of dasyurus or armadillo.

CYPERACEÆ (*cyperum*, triangular wild rush); a tribe of plants answering to the English sedges. They are distinguished from grasses by their stems being solid and generally triangular, instead of being hollow and round. Together with *gramineæ*, they constitute what writers on botanical geography often call *glumaceæ*.

cæspitosus, a um; turf-like.

calcaratus, a, um; spur-shaped.

- calcariformis, e ; spur-shaped.
 calceola ; sandal.
 calopora ; beautiful pored.
 calvus, a, um ; bald.
 calycularis, e ; cup-like.
 campanulatus, a, um ; bell-shaped.
 canaliculatus, a, um ; }
 canaliferus, a, um ; } channeled.
 cancellaria ; }
 cancellatus, a, um ; } latticed.
 candidus, a, um ; white.
 canterriatus, a, um ; railed, staked.
 caperatus, a, um ; wrinkled.
 capillaris, e ; hair-like
 capistratus, a, um ; haltered, muzzled.
 carina ; a keel.
 carinaria ; }
 carinatus, a, um ; } having a keel, or forming more
 } or less elevated ridges.
 carinella ; little keel.
 carpomorpha ; fruit-shaped.
 cassis ; a helmet.
 cassinoïdes ; helmet-like.
 castaneus, a, um ; chestnut-like.
 catenulatus, a, um ; chained.
 catillus ; a little dish.
 catinus ; a dish.
 caudatus, a, um ; tail pointed.
 cauliniæfolia ; stalk-leaved.
 centrotus, a, um ; knotted.
 cervicornis, e ; stag's horn shaped.
 chamæformis, e ; cockle-shaped.
 cinctus, a, um ; }
 cingulatus, a, um ; } girded.

- circinatus*, a, um ; compass-like.
cirrhosus, a, um ; cirrhous, terminated by a spiral
 or flexuous filiform appendage.
cirroïdes ; cirrus-like.
citharella ; little lute.
clathratus, a, um ; barred.
clathroïdea ; bar-like.
clavaroïdes ; club-like.
clavatula ; little club.
clavatus ; club-like.
clavicularis, e ; collar bone shaped.
claviger, a, um ; club-bearing.
clunicularis, e ; haunch-like.
clypeatus, a, um ; shield-like.
coarctatus, a, um ; compact.
cochleare ; a spoon.
cochlearella ; little screw.
cochleatus, a, um ; screw-shaped.
colubrinus, a, um ; snake-like.
columbella ; a little dove.
columellaris, e ; little pillar like.
combustus, a, um ; burnt up.
complanatus, a, um ; smoothed.
comptus, a, um ; elegant.
concavus, a, um ; hollow.
conchiticus, a, um ; shelly.
concinus, a, um ; handsome, pretty.
conifer, a, um ; cone-bearing.
conjungens ; immediately uniting.
conoïdea ; cone-like.
constrictus, a, um ; bound close together.
contiguus, a, um ; near.
contortuplicatus, a, um ; folded, and much twisted.

- contortus, a, um ; twisted.
 conulus ; little cone.
 coralloïdes ; coral-like.
 corbula ; a little basket.
 corculum ; darling.
 cordiformis, e ; heart-shaped.
 corneus, a, um ; horny.
 cornu arietis ; ram's horn.
 corniculatus, a, um ; horned
 cornu pastoris ; shepherd's horn.
 cornutus, a, um ; horned.
 corona ; a crown.
 coronula ; little crown.
 corrugatus, a, um ; wrinkled up.
 corticatus, a, um ; coated.
 corymbosus, a, um ; ivy berried.
 costatus, a, um ; ribbed.
 costellatus, a, um ; having very little ribs.
 costulatus, a, um ; having little ribs.
 crassacauda ; thick tail.
 crassatinus, a, um ; thickish.
 crassispina ; thick-spined.
 crassissimus, a, um ; very thick, or thickest.
 crassiusculus, a, um ; thickish.
 crassiventer ; thick-bellied.
 crassus, a, um ; thick.
 crateriformis, e ; goblet-shaped.
 crenato-striatus, a, um ; convex striated, or having
 convex lines.
 crenatula ;
 crenatus, a, um ; } having convex teeth.
 crenularis, e ; marked like the lines of a battle-
 ment.

- crepidula ; a slipper.
 cribrosus, a, um ; sieve-like.
 crispus, a, um ; curled.
 crista galli ; cock's comb.
 cristatus, a, um ; crested.
 cristella ; little crest.
 cruentatus, a, um ; bloody.
 crumena ; a purse.
 crustulentus, a, um ; wafer-like.
 cryptopora ; having the pores concealed.
 cubicodon ; solid tooth.
 cucullæa ;
 cucullatus, a, um ; } hooded.
 cuneatus, a, um ; wedged.
 cuneiformis, e ; wedge-shaped.
 cupuliformis, e ; cupola-shaped.
 curtansatus, a, um ; shortened, curtailed.
 curtus, a, um ; short.
 curvicornis, e ; bent horned.
 curvinodus, a, um ; bent at the joints.
 curvirostris, e ; bent jaw.
 cyathiformis, e ; cup-shaped.
 cyclostoma ; circular mouth.
 cylindricodon ; cylindrical tooth.
 cymbiformis, e ; boat-shaped.
 cymbium ; a boat.
 cymbula ; little boat.
 cygnipes ; swan-footed.

D.

DAPEDIUS, or **DAPEDIUM** (*δαπέδον*, *dapedon*, a pavement); *pavement-fish*, so named from the surface of the scales resembling a tessellated pavement. A genus of fossil fishes of the lias. There are the *D. Colei* (Lord Cole's dapedium) and *orbis*, circular.

DASYPUS (*δάσυς*, *dasys*, rough; *πούς*, *pous*, a foot); *rough-foot*. The scientific name given to the armadillo.

DEBÂCLE (French); breaking up of ice in a river.

DÉBRIS (French); matter worn off rocks.

DECAPOD (*δέκα*, *deca*, ten; *πούς*, *pous*, a foot); *ten-footed*. An order of crustacea, so named by Cuvier, of the section malacostracea, or *soft crustacea*, of which the *gebia stellata* is an example.

DECIMALS (*decem*, ten), or **DECIMAL FRACTIONS**; so called because the integer, or whole number, as one pound, one gallon, &c., is supposed to be divided into *ten* equal parts, and those parts into tenths, and so on without end. Decimals are the ciphers on the right hand side of the point or dot, called the *decimal point*, as $\cdot 84$. Whole numbers are the figures on the *left hand* of the decimal point, as 28 \cdot 65, read thus — 28 whole numbers, 65 decimals.

A Table to enable readers totally unacquainted with Decimals to form some estimate of their relative value.

·1	decimal one,	or $\frac{1}{10}$	one tenth of an integer, or whole number.
·2	two,	$\frac{2}{10}$	two tenths
·3	three,	$\frac{3}{10}$	three tenths
·4	four,	$\frac{4}{10}$	four tenths
·5	five,	$\frac{5}{10}$	five tenths
·6	six,	$\frac{6}{10}$	six tenths
·7	seven,	$\frac{7}{10}$	seven tenths
·8	eight,	$\frac{8}{10}$	eight tenths
·9	nine,	$\frac{9}{10}$	nine tenths
·15	fifteen,	$\frac{15}{100}$	fifteen hundredths
·36	thirty-six,	$\frac{36}{100}$	thirty-six hundredths
·99	ninety-nine,	$\frac{99}{100}$	ninety-nine hundredths

So the fractions $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, will be represented by the decimals ·25, ·5, ·75, that is, $\frac{25}{100}$, or $\frac{1}{4}$; $\frac{50}{100}$, or $\frac{1}{2}$; $\frac{75}{100}$, or $\frac{3}{4}$.

Suppose it to be stated that alum, lime, carbon, &c. are found mixed with or entering into combination with other substances in the following proportions;—alum ·54, lime ·36, carbon ·26. This implies that alum forms ·54 decimals, or $\frac{54}{100}$ (fifty-four hundredths) of the whole hundred parts of which the composition is formed; lime forms ·36 decimals, or $\frac{36}{100}$ (thirty-six hundredths) of the composition in which it was said to be present; carbon ·26 decimals, or $\frac{26}{100}$ (twenty-six hundredths) of the composition into which it entered.

DECREPITATE (*decrepito*, to crackle or make a noise); to fly into particles with a crackly noise when exposed to heat, as some minerals do.

- DEGRADATION** (*de*, from ; *gradus*, a step); the wearing down of higher lands.
- DELTA**; land carried into seas and lakes by rivers; so called, from the resemblance in figure to the Greek Δ, delta.
- DEMIURGIC** (δημος, *demos*, the people ; εργον, *ergon*, a work); the *people's work*. The mechanical part of any operation or experiment.
- DEMONSTRATION** (*demonstro*, to prove evidently); a succession of connected propositions, beginning with self-evident truths, and advancing to remoter ones. See 'A PRIORI and 'A POSTERIORI.
- DENDRITIC** (δενδρον, *dendron*, a tree); resembling a *tree* or shrub, as some ferns from India do. The same meaning as *arborescent* (*arbor*, a tree).
- DENDROLITE** (δενδρον, *dendron*, a tree ; λιθος, *lithos*, a stone); a *stone tree*; that is, a tree in a fossil state.
- DENUDATION** (*denudo*, to lay bare); the carrying away by the action of running water of a portion of the solid materials of the land, by which inferior rocks are laid bare.
- DEOXIDISED, DEOXIDATED**; deprived of oxygen, disunited from oxygen.
- DERCETIS** (an idol worshipped at Joppa, called Dagon, half man, half fish); a genus of fossil fishes of the ganoïd order, found in the chalk.
- DESICCATION** (*desicco*, to dry up); a drying up.
- DESQUAMATE** (*de*, from ; *squamo*, to scale); to scale off.
- DETONATION** (*de*, from ; *tono*, to thunder); a thundering forth.
- DETRITAL ROCKS**; a term applied to such rocks as, by a supposition of the pre-existence of solid

mineral matter, may have been derived from it by some abrading power.

DETRITUS (*de*, from ; *terō*, to rub) ; matter worn off, or disintegrated materials of rocks.

DEVELOPMENT (general term) (*develo* ; *de*, from ; *velum*, a veil or covering) ; a term applied to express the organic changes which take place in the bodies of every animal and vegetable being, from their embryo state, until they arrive at maturity.

DEVELOPMENT ; (geological term), applied to those progressive changes in fossil genera, and species which have followed one another during the deposition of the strata of the earth, in the course of the gradual advancement of the grand system of creation.

DICERAS (*δεις*, *dis*, two ; *κερας*, *keras*, horn) ; *double-horn*. *Diceras arietina* ; *double ram's horn*, a shell found in the Alps. A division of the oolite is called *calcaire à dicérates*, from the abundance of these shells in it.

DICHOTOMOUS (*διχα*, *dicha*, doubly ; *τεμνω*, *temno*, to cut) ; divided into two—speaking of a fossil tree, the trunk of which branched off into *two parts*.

DICOTYLEDONOUS (*δεις*, *dis*, double ; *κοτυληδον*, *coty-ledon*) ; having two cotyledons or seed-lobes. A grand division of the vegetable kingdom.

DICRANOCERUS (*δικρανος*, *dicranos*, two-forked ; *κερας*, *ceras*, horn) ; *two-forked horn*. A term applied to a species of fossil cervus, or stag.

DICROÏSM (*δεις*, *dis*, two ; *χρωμα*, *chroma*, colour) ; having two or more colours. The exhibition of different colours when examined by transmitted

light. This is very distinct in iolite, tourmaline, &c.

DIDELPHIS (δις, *dis*, two; δελφύς, *delphys*, a womb); animals which have a *marsupium*, or pouch, as the opossum or kangaroo.

DIKES, or **DYKES** (provincial name for *wall*). When a mass of the unstratified or igneous rocks, such as granite, trap, and lava, appears as if injected into a great rent in the stratified rocks, cutting across the strata, it forms a dike; and as they are sometimes seen running along the ground, and projecting like a *wall*, from the softer strata on both sides of them having wasted away, they are called, in the North of England and in Scotland, *dikes*, or *walls*. Mr. Lyell says it is not easy to draw the line between dikes and veins. The former are generally of larger dimensions, and have their sides parallel for considerable distances; while veins have generally many ramifications, and these often thin away into slender threads. See **ELVAN**.

DILUVIUM (Lat.); *a deluge*, and also the matter transported by a deluge. Superficial beds of gravel, clay, and sand, which appear to have been produced by a great irruption of water which overwhelmed great part of the northern hemisphere, has had the name *diluvium* applied to them by Dr. Buckland. They are the newer *pliocene* in the classification of Mr. Lyell.

DINOTHERIUM (δεινος, *deinos*, terrible; θηριον, *therion*, wild beast); a gigantic *terrible*-looking herbivorous animal from fifteen to eighteen feet long, found in the strata of the tertiary formation

It had two tusks fixed in the lower jaw in a downward position, and a proboscis. It was nearly related to the hippopotamus, forming a link between the cetacea and pachydermata, or large terrestrial mammalia.

DIOPTASE (διοπτομαι, *diptomai*, to see through); a mineral that occurs in the steppes of Siberia, so named in allusion to the possibility of *seeing* the natural joints by transmitted light.

DIP; inclination of the lines of strata as compared with the horizon.

DIPTERA (δεις, *dis*, double; πτερον, *pteron*, a wing); having two wings, as the house-fly.

DIPTERUS (δεις, *dis*, two; πτερον, *pteron*, a wing or fin); *two-finned*. A genus of fossil fishes. A species is named *macrolepidotus* (μακρος, *macro*, long; λεπις, *lepis*, a scale), *long-scaled*; and *macropygopterus* (πυγων, *pygon*, a cubit), *long cubit-finned*.

DIRT BED OF PORTLAND; a layer of mould with the remains of trees found in working the free-stone in the oolitic formation of that island. See Manual of Geology, p. 298.

DISAURIS (δεις, *dis*, divided; *auris*, an ear); *having divided ears*. A species of the genus of fossil fishes, the Carcharias.

DISINTEGRATE (*de*, from; *integer*, entire); to wear away from that which was before entire.

DOCIMASTIC (δοκιμαζω, *dokimazo*, to try) art; that of *trying* or *examining* minerals to ascertain what metals they contain.

DOLERITE; one of the varieties of the trap rocks composed of augite and felspar.

DOLICHODEIRUS (δολιχος, *dolichos*, long; δεира, *deira*, a neck); *long-necked*. A species of the plesiosaurus.

DOLomite (*Dolomieu*, the French geologist); a crystalline limestone, containing magnesia as a constituent part.

DORSAL (*dorsum*, back); belonging to the back.

DORSIBRANCHIA (*dorsum*, a back; βραγchia, *branchia*, gills and organs for breathing under water). Cuvier's second order of annelidæ, with gills on their backs, as the amphinomæ.

DOUBLE REFRACTION (*refrango*, to break back); the property of some minerals of presenting two images of any object seen through them.

DRUSY (German, *druse*, a little swelling); covered with little projections. The surface of a mineral is said to be *drusy* when composed of very small *prominent* crystals nearly equal in size to each other.

DUNES; low sand hills.

dædaleus, a, um; beautifully worked, as if by Dædalus.

damæcornis, e; deer's horn.

decussatus, a, um; arranged in pairs that alternately cross each other.

defossus, a, um; deeply buried.

delicatulus, a, um; rather delicate.

deltoïdea; trowel-shaped, or Greek Δ shaped.

denarius; a coin.

Dentalium;
dentatus, a, um; } toothed.

deplexus, a, um; wound round.

- depressus, a, um ; depressed.
 dichotomus ; divided into two.
 dictyota ; set with netting.
 didymus, a, um ; double.
 difformis, e ; shapeless.
 digitaliformis, e ; finger-like.
 digitatus, a, um ; digitated, divided like fingers.
 digona ; biangular.
 dilatatus, a, um ; widened.
 dimidiatus, a, um ; halved.
 discoïdeus, a, um ; quoit-shaped.
 discretus, a, um ; divided.
 discus ; a quoit.
 dispar ; unlike, unequal.
 distichus, a, um ; in two rows, double rowed.
 divaricatus, a, um ; straggling.
 dolabra ; an axe.
 dolabriformis, e ; axe-shaped.
 doliaris, e ; tun-shaped.
 doliolus ; a little cask.
 Dolium ; a tun.
 Donax ; a reed.
 dorsatus, a, um ; high-backed.
 draconacephala ; dragon's head.
 dubius, a, um ; doubtful.
 dumetosus, a, um ; bushy.
 duplicatus, a, um ; doubled.
 duriusculus, a, um ; rather hard.

E.

EARTH'S CRUST; that portion of the solid surface of the earth which is accessible to human observation.

ECDYSIS (*εκδυσις, ecdysis*, a casting off); another word for *moult*, as of a lobster when it changes its shell.

ECHINIDANS (*echinus*, a sea urchin); the family of *echinites*, as stelleridans of *star-fish*.

ECHINITES (*εχινοσ, echinus*); a sea egg or urchin.

ECHINODERMATA (*εχινοσ, echinus*, a sea urchin; *δερμα, derma*, a skin); creatures with rough skins like the sea urchins.

ECHINOSTACHYS (*εχινοσ, echinos*, a thorn; *σταχυσ, stachys*, an ear of corn); *thorn-ear*. A genus of fossil plants.

ECONOMIC GEOLOGY; a term now applied to that branch of our science, which aims at its practical application for the benefit of mankind. To illustrate this, let us consider that the Bangor Welsh slate was, till recently, sold in many parts of the United States at 6*l.* per ton, near where geologists have shown that slate is to be procured as good as any in the world. The price there is now 1*l.* per ton. The great Smeeton went, in the infancy of geology, to Portland, for stone for the Eddystone lighthouse, but sent to Aberthaw, in South Wales, for lime, when he could have procured, had geologists informed him of the fact, as good at Lyme Regis, only distant some eleven hours' sail. Many great houses and

churches have been built at great cost, with materials brought from a distance, when much better were near at hand. An influential gentleman of Somerset, lately deceased, — W. Hanning, Esq., — was saved from a ruinous loss by a conversation with Professor Buckland, whom he accidentally met in a mail coach. The valuable hints that might have been given to Smeeton and the architects, and which were furnished by a great living geologist, illustrate the value of this application of geology, justly styled *economic*, for which a museum is preparing by H. F. De la Bêche, Esq. F.G.S., in London.

ECPYROSIS (*εκπυρωσις, ecpyrosis*); a destruction by fire.

EDENTATA (*e*, from; *dens*, a tooth); animals that want the front or incisor teeth.

EICHSTADT, in Bavaria; superficial loam or gravel, animal remains.

ELVAN; a Cornish term for *dyke*. Long lines of granitic and felspar-porphyrific rocks in Cornwall cut the slates and granites, greatly resembling trap dykes.

ELYTRA (*ελυτρον, elytron*, a sheath); the wing-sheaths, or upper crustaceous membranes, which form the superior wings in beetles. They cover the body, and protect the true membranous wing.

ELYTRINE (*ελυτρον, elytron*, a sheath) or **CHITINE**; a substance of which the horny covering of insects is composed.

EMBOUCHURE (French); mouth of a river.

ENALIOSAURIANS (*εναλιος, enalios*, marine; *σαυρος, sauros*, a lizard); *marine lizards*. A term ap-

plied to the great saurian animals which are supposed to have lived in the sea.

ENCHODUS (εγχος, *enchos*, a spear; οδους, *odous*, a tooth); *spear-toothed*. A genus of fossil fishes found in the chalk of the cycloïd order. A species is named *halocyon*, or *sea-dog*.

ENCRINITES (εν, *en*, one; κρινω, *krino*, to perceive); a lily-shaped animal, so named by Miller in his work on the fossil crinoïdea, because the little bones of its stem, instead of having, as pentacrinites, *five* angles, have only *one* little circle perforated in the centre. Miller ranks it as the second genus of the first division. Marble principally composed of the bones of the encrinites, which latter, when taken singly, resemble wheels (τροχος, *trochos*), is called **ENTROCHAL** marble, which see.

ENDOGENITES (ενδον, *endon*, within; γεννω, *gennao*, to produce); a fossil tree allied to palms, called *echinatus* by M. Brongniart.

ENDOGENOUS (ενδον, *endon*, within; γεννω, *gennao*, to produce) plants; *within producing*. The growth of whose stem takes place by addition from *within*. A term the opposite of *exogenous*.

ENGI, canton Glaris, Switzerland; blue slate of the lower cretaceous system, a celebrated deposit of fossil fishes.

ENOPLOSUS (ενοπλος, *enoplos*, armed); a genus of fossil fishes of Agassiz. A species is named *pygopterus* (πυγων, *pygon*, a cubit; πτερον, *pteron*, a fin or wing); fin a cubit long.

ENSIFORM (*ensis*, a sword; *forma*, form, shape); sword-shaped.

ENTOMOSTRACOUS (*εντομα*, *entoma*, insects) crustacea; *insect crustacea*. Such as the genera eurypterus (broad-wing) and cypris. Cuvier's second section of crustacea.

ENTROCHAL (*τροχος*, *trochos*, a wheel) marble; vast strata extending over large tracts of country in Northern Europe and North America, often as entirely made up of the petrified bones of encrinetes, as a corn-rick is composed of straws. (See Dr. Buckland's Bridgewater Treatise, vol. i. p. 430.) *Entrochi*, or wheel-stones, is the term applied to these insulated vertebræ; and as the perforations in the centre of these joints afforded a facility for stringing them as beads, in ancient times, for rosaries, they still retain, in the northern parts of England, the appellation of St. Cuthbert's beads.

EOCENE (*ηως*, *eos*, aurora or the dawn; *καινος*, *kainos*, recent); *recent dawn*. A term applied by Mr. Lyell to one of the four periods of the tertiary strata, each characterised by containing a very different proportion of fossil shells of *recent* species. The earliest period, or *eocene*, is so called because the very small proportion of living species contained in these strata indicates what may be considered the first commencement, or *dawn*, of the existing state of the animate creation.

EPHEMERAL (*επι*, *epi*, for; *ημερα*, *emera*, a day); *living only one day*, as some insects do. Man has been called the ephemeron of this earth.

EPIPHYSIS (*επι*, *epi*, upon; *φωω*, *phuo*, to grow); a natural covering, skin or shell.

EPHYPHYTE (*επι, epi*, upon; *φυτον, phytton*, a plant); a plant which grows *upon* other vegetables, but derives (unlike the parasite) no nourishment from them.

EPPLESHEIM; near Altzey, twelve leagues south of Mayence, where, in the sand of the miocene formation, are found animal remains, such as the Dinotherium, &c.

EQUISETA (*equus*, a horse; *seta*, a bristle); a plant belonging to the first class, *monandria*, and commonly called *mare's tail*.

ERODE (*e*, from; *rodo*, to gnaw); to gnaw away. Echinites have the power of *eroding* the stone so as to make a *nidus* (or nest) for themselves.

ERRATIC BLOCKS (*erro*, to wander); large masses of stone, different in composition from the rocks in their vicinity, and which must have been transported from a distance. Many erratic blocks in England can be traced northward to their parent stocks in the British Islands; some in Yorkshire apparently came from Norway. See De la Bêche's Geological Researches, and his Manual. Rounded erratic blocks are called boulders.

ERZGEBIRGE (German, *erz*, ore; *gebirge*, mountains); the *ore* mountains, as distinguished from the Hartzgebirge, the *woody* mountains. A primitive mountain range extending along the boundary line of Bohemia and Saxony, very rich in metals of almost every kind.

ESCARPMENT (Fr. *escarper*, to cut steep); the abrupt face of a ridge of high land. Strata are

said to terminate in an escarpment when they end abruptly.

ESTUARIES (*æstus*, the tide); inlets of the land which are entered both by rivers and the tides of the sea. Such as the Thames, Severn, Tay, &c.

ETHOPHYLLUM (*αιθος*, *aithos*, shining; *φυλλον*, *phyllon*, a leaf); *shining leaf*. A genus of fossil plants.

ETIOLOGY (*αιτια*, *aitia*, a cause; *λογος*, *logos*, a discourse); the science which treats of the *causes* of things.

EUGENIACRINITES (*eugenia*, a clove; *κρινω*, *krino*, to perceive); a lily-shaped animal, called, as its name implies, *clove-like* by Miller, who places it in his fourth division of *coadunata* (or soldered together) because the pieces are not connected by sutures, but by solid anchylosis.

EUGNATHUS (*ευ*, *eu*, well; *γναθος*, *gnathos*, a jaw); *fine-jaw*. A genus of fossil ganoid fishes of Agassiz.

EUPHORBIA (*ευ*, *eu*, well; *φορβη*, *phorbe*, food); *good food*. A genus of exogenous plants, which, as the cassava, secrete a *valuable food* for man; hence the name.

EURYCEROS (*ευρυς*, *eurys*, broad; *κερας*, *ceras*, a horn); *broad-horn*. Applied to a fossil cervus, or stag.

EURYNOTUS (*ευρυς*, *eurys*, broad; *νωτος*, *notos*, a back); *broad-back*. A genus of fossil fishes of Agassiz.

EXOGENOUS (*εξω*, *exo*, without; *γεννω*, *gennao*, to produce) plants; *producing from without*.

In which the growth takes place by addition from without. A term the opposite of endogenous.

EXPERIMENTUM CRUCIS (experiment of the cross); a *decisive* experiment. Some explain this by considering the cross as a direction to true knowledge; others as a kind of torture, whereby the nature of the thing is extorted, as it were, by violence.

EXUVIÆ (*exuo*, to put off, or divest). In *common* terms, the transient parts of certain animals, which they put off or lay down to assume new ones, as serpents and caterpillars shift their skins. In *geological* language it refers not only to the cast-off coverings of animals, but to fossil shells and other remains which animals have left in the strata of the earth.

eburneus, a, um; ivory.

echinatus, a, um; bristly.

echinophorus, a, um; thorny.

edentulus, a, um; toothless.

editus, a, um; lofty.

edulinus, a, um; edible.

effossus, a, um; dug out.

elephantoïdes; elephant-like.

elongatus, a, um; lengthened.

emarginatus, a, um; emarginate, having a notch at the end as if a piece had been taken out.

empleura; full-sided.

ephippium; a saddle.

equisetiformis, e; mare's tail shaped.

erosus, a, um; gnawed.

- erugatus, a, um ; smooth from marks having been worn away.
- escharoïdes ; chafing-dish-shaped.
- euglyphus, a, um ; well carved.
- euomphalus, a, um ; well centered or bossed.
- evulsus, a, um ; torn out.
- exaltatus, a, um ; raised.
- exaratus, a, um ; defaced as to marks previously existing.
- excavatus, a, um ; hollowed or scooped out.
- excisus, a, um ; cut out, erased.
- exertus, a, um ; projecting.
- exesus, a, um ; corroded.
- exoletus, a, um ; worn out, defaced.
- expansus, a, um ; widely spread.
- explanatus, a, um ; spread out.
- extenuatus, a, um ; thinned away.

F.

- FÆCAL (*fæces*, excrement) remains ; such as coprolites, the *excrement* of the ichthyosauri, &c.
- FALUNS ; French provincial name for some tertiary strata abounding in shells, in Touraine, which resemble, in lithological characters, the crag of Norfolk and Suffolk.
- FATHOM ; six feet.
- FAULT (a miner's term) ; a dislocation of the continuous strata, by which not only is their continuity destroyed, but the mass of beds on one, sometimes on both sides, are heaved out of their original position. Faults are called, by the coal miners, "troubles."

FAUNA (*Fauni*, rural deities, in Roman mythology). The various kinds of animals peculiar to a country constitute its *fauna*, as the various kinds of plants constitute its *flora*. (Lyell.)

FAVULARIA (*favulus*, a little honey-comb); a genus of extinct fossil plants, all of which have scars arranged in vertical rows.

FELSPAR (German, *fels*, a rock). A simple mineral, which, next to quartz, constitutes the chief material of rocks. The white angular portions in granite are felspar. Mr. Lyell says this mineral always contains some alkali in its composition. In *common felspar* the alkali is potash; in another variety, called albite or Cleavlandite, it is soda. *Glassy felspar* is a term applied when the crystals have a considerable degree of transparency. *Compact felspar*, a name of more vague signification, appears to contain both potash and soda.

FELSPATHIC; of or belonging to felspar.

FEMUR (Lat. thigh); the first and largest bone of the *hind* paddles of an ichthyosaurus or plesiosaurus, answering to the humerus of the front paddles.

FERRUGINOUS (*ferrum*, iron); of the nature of, or impregnated with, iron.

FIBULA (Lat. the lesser bone of the leg); the bone or plate which, with the tibia, are the first bones of the hind paddle of the ichthyosaurus after the femur.

FILIFORM (*filum*, a thread; *forma*, form); thread or wire like.

FILIX (Latin); fern.

- FLABELLARIA** (*flabellum*, a fan); fan-like. A genus of fossil plants.
- FLÆTZ** (German, *flötz*, layers or strata) rocks; such as rest in planes parallel with the horizon. Applied to the secondary strata, because those rocks are supposed to occur most frequently in flat horizontal beds.
- FLUCAN**; Cornish term for fault or dislocation of continuous strata.
- FLUOR SPAR, FLUATE OF LIME**; a well-known mineral of Derbyshire, Cornwall, and Durham, used in various ornamental forms, and in Cornwall as a flux for copper ore. The blue variety is termed *Blue John*.
- FLUSTRA, or SEA MAT**; a genus of polyparia which attach themselves to other bodies. Most fossil echinites of the chalk have flustra attached.
- FLUVIATILE** (*fluvius*, a river); belonging to a river. *Fluviate* deposits; such deposits as are caused by a river.
- FOLLICLES** (*folliculus*, a little bag); little bags or vessels communicating with the branchial arteries in the nautilus pompilius. See Dr. Buckland's Bridgewater Treatise, plate 34. .
- FORAMINATED** (*foramen*, a bored hole); bored, or having holes. Applied to a shell, the chambers of which are united by a small perforation or *foramen*.
- FORAMINIFERA** (*foramen*, a hole or perforation; *fero*, to bear); a name given by D'Orbigny to a family of microscopic shells, the chambers of which are united by a small perforation or *fora-*

men. Mr. Lyell says that recent observation has shown that some, at least, are not cephalopoda, as D'Orbigny supposed.

FOREST MARBLE ; a member of the oolitic group.

FORMATION ; a certain series of rocks supposed to have been produced under similar general circumstances, and at about the same epoch.

FORMULA (a dim. of *forma*, a form) ; a little form or prescription ; directions for performing any chemical operation, &c.

FOSSIL (*fossilis*, from *fodio*, to dig ; any thing that may be dug out of the earth). All minerals were once called fossils ; but geologists, says Lyell, now use the word only to express the remains of animals and plants found buried in the earth.

FOSSILIFEROUS (*fossilis*, fossil ; *fero*, to produce) ; containing fossils.

FOX MOULD ; a provincial name for the green sand when coloured like the *fox* by an oxide of iron.

FRESHET ; a river flood.

FRIABLE ; easily reduced to powder.

FRUCTICOSE (*fructus*, fruit). When many branches of a mineral issue from a common stem, and meet together partywise, resembling a cauliflower, the structure is said to be *fructisose*.

FUCOÏD (*ειδος*, *eidos*, form) ; *fucus* or *sea-weed like*.

A term applied to several fossil plants. There is a *fucoïd* shale, so called from the abundance of fuci it contains.

FUCUS, pl. **FUCI** ; a class of sea-weeds.

FULGURITES (*fulgur*, lightning) ; vitrified (or glass) sand tubes, supposed to have originated from the

action of *lightning*, mostly found on mountains, called in German *blitzröhre*, or lightning pipe.

FULLER'S EARTH; a portion of the oolitic group, as Mr. Lonsdale says, about 140 feet thick, near Bath, the substance of which is of great use in the cleansing of cloth by *fullers*; hence its name.

FUMAROLES (*fumus*, smoke); holes from which smoke issues in a solfatara, or volcano.

FUNGIA (*fungus*, a mushroom); a genus of corals, called, from their resemblance, *sea-mushrooms*.

FUNGIFORM (*fungus*, a mushroom; *forma*, shape); *mushroom-shaped*, as some calcareous stalactites are.

FURCULA (Lat. dim. of *furca*, a fork). A little fork.

FUSUS (Lat. a spindle); a kind of fossil shell.

fabā; a bean.

fabagella; little bean.

falcatus, a, um; falcate, or sickle-shaped.

falcifer, a, um; sickle-bearing.

fasciarius, a, um; band-shaped.

fasciatus, a, um; bandaged.

fasciculatus; faggot-like.

favosioïdes;

favosus, a, um; } honeycomb-like.

fibrosus, a, um; fibrous.

fibulatus, a, um; brooch-like.

ficoïdes; fig-like.

ficulneus, a, um; of a fig tree.

fidicula; a little fiddle or kit.

filiciformis, e; fern-shaped.

filiformis, e; thread-shaped.

- flogranus, a, um ; fine grained.
 filosus, a, um ; thread-like.
 fimbriatus, a, um ; fringed.
 fissicostatus, a, um ; having divided ribs.
 fissura ; a cleft.
 fissurella ; a little cleft.
 fistula ; a pipe.
 fistulosus, a, um ; pipe-like.
 flabelliformis, e ; fan-shaped.
 flabellulus ; a little fan.
 flabellum ; a fan.
 flagelliformis, e ; whip-shaped.
 flexicostatus, a, um ; bent ribbed.
 flexuosus, a, um ; flexuous, crooked.
 floccosus, a, um ; floccous, or wool-like.
 floriceps ; flower-headed.
 florigemma ; flowery gemmed.
 fluctuatus, a, um ; waving.
 foliaceus, a, um ; leaf-shaped.
 folium ; a leaf.
 fonticola ; fountain-dwelling.
 fonticula ; a little fountain.
 foraminosus, a, um ; full of holes.
 fornicatus, a, um ; ant-like.
 fornicatus ; arched.
 frondosus, a, um ; branching.
 frontalis, e ; having a large forehead.
 funalis, e ; rope-shaped.
 funatus, a, um ; rope-shaped.
 funiculatus, a, um ; cord-like.
 fungiformis, e ; fungus-shaped.
 fungoides ; fungus-like.
 furcatus, a, um ; forked.

fuscatus, a, um ; dark.
fusiformis, e ; spindle-shaped.

G.

- GADOLINITE** (M. Gadolin); a mineral, called after its discoverer, containing yttria.
- GALENA** (γαλεω, *galeo*, to shine); a metallic ore, a compound of lead and sulphur. It has often the appearance of highly polished lead.
- GALEUS** (an ancient name of a species of fish); a genus of fossil fishes of the placoïd order, found in the chalk. A species is styled *pristodontus* (πριστις, *pristis*, saw), *saw-toothed*.
- GALLIBI** (*Gallibi*, a tribe of Indians); the name given to the human skeleton from Guadaloupe, which is called the *Gallibi*. There is a tradition that a battle and massacre of a tribe of Gallibis, natives of Guadaloupe, by the Caribs, took place about 1710, on the spot where this skeleton was found, on a sandy neck of land. Professor Moultrie, who has the head, believes the Gallibi was one of the Peruvian race, or a tribe possessing a similar craniological development.
- GANGUE**, or **GANGART** (German); the same as *matrix*. Silver occurring in or upon carbonate of lime is said to have carbonate of lime for its *matrix*.
- GANNISTER**; a local name for a sandstone in the Yorkshire and Derbyshire coal fields.
- GANOÏDS**, or **GANOÏDIANS** (γανος, *ganos*, splendour); Dr. Agassiz's second order of fishes,

having angular scales, and brilliant from the polish of their enamel.

GARNET (Ital. *granato*; a pomegranate, the grains of which it resembles in colour); a simple mineral, of a deep red colour, crystallised; most commonly met with in mica slate, but also in granite and other igneous rocks.

GASTEROPODA (*γαστήρ, gaster*, the belly; *πούς, pous*, a foot); *molluscs*, or soft creatures, whose feet are attached to the belly, as in the limpet and *haliotis*, or sea-ear. Cuvier assigns nine orders to this third class of molluscs.

GAULT, or GOLT; provincial name in the East of England for a series of beds of stiff blue or black clay and marl, the geological position of which is between the upper and lower green sand. It abounds in shells, which often possess a pearly lustre.

GECARCINIANS (*γη, ge*, the earth; *καρκινός, carcinos*, a crab); the *land crabs*.

GEODE (German); a hollow ball. Hollow balls of agate found at Oberstein, lined with crystals of quartz or amethyst, are termed *geodes*.

GEODESY (*γη, ge*, the earth; *δεω, deo*, to tie or bind in order to measure it); the measuring large areas of the earth's surface in order to determine the general figure of the earth, &c.

GEOGOSY (*γη, ge*, the earth; *γνώσις, gnosis*, knowledge); a knowledge of the earth. A term little used, and applied by Werner in the same sense as **GEOLOGY**.

GEOGONY (*γη, ge*, the earth; *γονός, gonos*, generation); the *generation of the world*. Like cos-

mogony (*κοσμος, cosmos*, the world; *γονος, gonos*, generation), it consists of abstract speculations regarding the original formation of the earth or world.

GEOLOGY (*γη, ge*, the earth; *λογος, logos*, discourse); the science of the earth, which includes, in a large sense, all acquired or possible knowledge of the natural phænomena on and within the globe. Werner made geology comprehend geognosy, geography, hydrography, meteorology, and geogony.

GEOSAURUS (*γη, ge*, the earth; *σαυρος, sauros*, a lizard); *earth-lizard*. A subgenus of saurians considered by Cuvier as intermediate between the crocodiles and monitors; and not named by him, as being a saurian that lived on the land, *earth-lizard*, but, though an aquatic creature, in reference to the *earth* (*Γη*), the fabled mother of the giants. The geosaurus and mosæsauros differ from each other principally in the teeth and the vertebræ.

GLACIER (Fr. *glace*, ice); vast accumulations of ice and hardened snow in the Alps and other lofty mountains.

GLACIS (term of fortification); a borrowed term to express an easy insensible slope or declivity less steep than a *talus*, which is also a term of fortification, and means the outside of a wall, of which the thickness is diminished by degrees, or which technically *batters back*.

GLANCE COAL (German, *glantz*, lustre); shining coal.

GLAPHYRUS (*γλαφυρος, glaphyros*, carved out; *ουρα*,

oura, a tail); *carved-tail*. A species of the fossil fish palæoniscus.

GLEN TILT; a famous locality in Perthshire, where the great Hutton beheld the granitic veins proceeding from the mass and penetrating the limestone strata, which had not been before observed. Hence his ecstasies and confirmation of his theory as the champion of the Plutonists, which see.

GLOSSOPETRA (*γλῶσσα*, *glossa*, a tongue; *πετρα*, *petra*, rock); *tongue-stone*. Early name for fossil sharks' teeth, assigned from the resemblance to a *tongue*; called also lamiodontes (*throat-teeth*) and odonto-*petræ* (*teeth-stones*). Sharks teeth are found in great quantities at Malta. See under the modern term **ICHTHYODONTES**, and an interesting article in the Penny Cyclopædia.

GLUCINUM (*glukus*, sweet); an elementary principle with an earthy base, so called from the taste of some of its salts.

GLYPTODON (*γλυπτος*, *glyptos*, sculptured; *οδων*, *odon*, a tooth); *sculptured-tooth*. An extinct fossil animal of the edentate order, so named from its fluted or sculptured teeth.

GNEISS; a local Saxon name applied by miners near Freyburg to a species of granite.

GOBIO (ancient name of gudgeon); a genus of fossil fishes of Agassiz.

GOÏTRE and **CRETINISM**; a swelling of the thyroid gland and a mental malady, connected with geology by a curious inquiry as to their prevalence within the limits of certain geological formations or rocks. Dr. M'Clelland, quoted

in the Hand-book for Switzerland, gives this table.

Granite and gneiss	-	goître	$\frac{1}{500}$	cretins,	none.
Mica slate and hornblende slate	none;	-	none.		
Clay slate	-	-	$\frac{1}{138}$	-	none.
Transition slate	-	-	$\frac{1}{149}$	-	none.
Steatitic sandstone	-	-	none;	-	none.
Calcareous rocks	-	-	$\frac{1}{3}$	-	$\frac{1}{32}$.

In the parishes of Merriot and Martock, near Crewkerne, situated in the rich valley of Somerset, where the inferior oolite prevails, nearly every one is affected with goître to a certain extent.

GOMPHOLITE (*γομφος, gomphos*, a nail; *λιθος, lithos*, a stone); *nail-stone*, called by the Germans *nägel fluh*, or nail heads. A conglomerate of the tertiary formation, in which the imbedded pebbles appear like *nails* in a baronial door.

GONIOMETER (*γωνια, gonia*, an angle; *μετρον, metron*, a measure); *angle-measurer*. An instrument for determining the angles at which the planes of crystals are inclined to each other.

GORGE (French); the throat or narrowest part of a pass.

GOSSAN; a Cornish miners' term for an iron ochreous substance which is generally found on the back of a lode containing copper. See De la Bêche's Report, &c.

GRAHAM ISLAND; which rose suddenly in the sea to the south-west of Sicily, in July, 1831, and was soon levelled and dispersed by the waves. It was named in compliment to Sir James Graham.

GRALLÆ (*gralla*, a crutch); waders, such as herons, &c.

GRAMINEÆ (*gramen*, grass); the order of plants to which grasses belong.

GRAMINIVORA (*gramen*, grass; *voro*, to eat); animals which live on grass.

GRANITE (*geranites*, contracted or corrupted from the word, as used by Pliny, for a species of stone; first used by Tournefort, in his voyage, published 1699; others derive it from *granum*, grain, because of its coarse *granular* structure); an unstratified igneous rock, generally found inferior to or associated with the oldest of the stratified rocks, and sometimes penetrating them in the form of dikes. It is usually composed of three simple minerals, — felspar, quartz, and mica.

GRANITOID; granite-like.

GRAPHITE (*γραφω*, *grapho*, to write or draw); carburet of iron, so named from its use in *drawing*, as black lead or plumbago used for pencils. It is found in great purity at Borrowdale in Cumberland.

GRAPTOLITE (*γραπτος*, *graptos*, written; *λιθος*, *lithos*, a stone); *written-stone*. A zoophyte found in transition sandstone in Norway, Bohemia, Loch Ryan (Scotland), &c., causing an appearance of drawings, as of maps, ruins, and vegetable forms. The Florentine or ruin marble, the dendritical (tree-like) ramifications on many limestones, and the moss-like forms in agates, were ranked as graptolites.

GRAUWACKE or **GREYWACKE** (German, *grau*, grey; *wacke*, a German miners' name for a particular

kind of arenaceous rock occurring on the Hartz); a term adopted for the lowest members of the secondary strata, which are generally *grey*, though sometimes red, and constitute a part of the transition series of the Continental geologists. Snowdon is an example of the grauwacke rocks; some of the mountains in Cumberland, Westmoreland, &c. of the grauwacke slate. De la Bêche, Murchison, and Sedgwick have differently apportioned this formation. Mr. Conybeare is desirous (as appears in Penny Cyclo.) of substituting for grauwacke the name of clasmoschist (*κλασμα*, *clasma*, a fragment). Mr. Murchison divides the upper grauwacke into six portions or subgroups.

GREEN SAND (Fr. *glauconie crayeuse*; German, *chloritische kreide*, *planerkalk*; or Shanklin sand, so called by Dr. Mantell); an extensive member of the tertiary formation of the cretaceous system of strata, about six hundred feet thick. As seen in cliffs, the green sand is remarkably yellow or brown, and from its colour, which it obtains from oxides of iron, is locally termed *fox mould*. Its name obtains among geologists, from the circumstance of the number of *green* grains of earth or chlorite, generally to be seen in a little quantity placed in the hand, which are green silicate of iron. The sterile summits of hills around the fertile vales of Devon, the Black Downs, and Dunstable Downs, are all composed of green sand. The whetstones for whetting scythes are hewed out from nodules of stone found by digging pits in these downs.

- GREENSTONE.** A variety of trap, composed of hornblende and felspar.
- GRÈS BIGARRÉ** (French); equivalent to the German *bunter sandstein*, and the English new red or variegated sandstone.
- GRÈS DE VOSGES**; a member of the red sandstone series, and very extensive deposit in the Vosges.
- GRIT**; a provincial name for a coarse-grained sandstone.
- GRYPHITEN KALK** (German); same as lias in English; *calcaire à gryphite* in French. Both terms from the frequency of the shell gryphæa.
- GUANO** (a Peruvian term); the excrement of birds, found fifty or sixty feet thick, and covered occasionally with drifted sand, and dug for manure. Geologists name this ornithocoprus, or bird-excrement (*ορνις*, *ornis*, a bird; *κοπρος*, *kopros*, excrement).
- GYMNOBRANCHIA** (*γυμνος*, *gymnos*, naked; *βραγχια*, *branchia*, gills and organs for breathing in water); a class of crustacea in which the legs are transformed into soft paddles, having *branchiæ*, or organs for breathing, which, from being uncovered, give the name gymno or nudi branchia, *naked branchiæ*.
- GYMNOSPERMOUS** (*γυμνος*, *gymnos*, naked; *σπερμα*, *sperma*, seed) plants; those which have their seeds *uncovered* and visible.
- GYPSUM** (term used by Pliny); a mineral composed of lime and sulphuric acid, hence called also *sulphate of lime*. It is called plaster of Paris, from its being found so abundantly near that city;

and after having been subjected to a strong heat, it is used for plaster casts, stucco, &c.

GYRACANTHUS (*γυρος*, *gyros*, curved; *ακανθα*, *acantha*, a spine); *curved-spines*. A genus of fossil fishes, of which the ichthyodorulite is found.

GYROGONITES (*γυρος*, *gyros*, curved; *γωνια*, *gonia*, an angle); bodies found in freshwater deposits, originally supposed to be microscopic shells, but subsequently discovered to be the seed vessels of freshwater plants of the genus *chara*.

GYRODUS (*γυρος*, *gyros*, round; *οδονς*, *odous*, a tooth); *round-tooth*. A genus of fossil fishes of Agassiz, of the placoid order, found in the oolite. The mouth of these fishes was armed with rows of *round* grinding teeth placed on the *os vomer* in the roof of the mouth, for crushing hard crustacea and fishes with bony scales. These teeth were anciently called *bufonites*. See Dr. Buckland's *Bridgwater Treatise*, and *Penny Cyclo*.

gagateus, a, um; agate-like.

galeus; a helmet.

geminans; doubling.

geminatus, a, um; doubled.

gemmatus, a, um; studded with gems, burnished.

gibberrulus, a, um; rather gibbous, convex, or tumid.

gibbosus, a, um; gibbous.

giganteus, a, um; gigantic.

gigas; a giant.

glaber, a, um; smooth.

glandifer, a, um; acorn-bearing.

globosus, a, um; globular.

glomeratus, a, um; heaped in a mass.

gongyloïdes, knob-like.

gracilis, e; slender.

gradatus, a, um; step by step, graduated.

granatus, a, um; in grains.

grandis, e; great.

granulatus, a, um; having little grains.

grumosus, a, um; grumous, in form of little clustered grapes.

gryphæatus; }
gryphæoïdes; } gryphite (a shell) like.

guttatus, a, um; covered with guttæ, or drops.

gyrosus, a, um; circular.

H.

HABITAT (*habito*, to dwell); *abiding place*. Shallow water is the *habitat* of certain fishes.

HACKLY (*hackle*, in fisherman's phrase, is a feather taken from a cock's neck for making artificial flies); having sharp protruding points like the plume of a hackle. A term applied to a fracture peculiar to the malleable metals.

HÆMAPOPHYSES (*αἷμα*, *hæma*, blood; *αποφύσις*, *aphophysis*, a process); *blood processes*. Short rib processes continued through a great part of the tail of the plesiosaurus, co-existing with the inferior laminae protecting the great *blood-vessels*. A term proposed by Professor Owen, and one contradistinguished from neurapophyses.

HÆMATITE (*αἷμα*, *hæma*, blood); bloodstone.

- HALIOTIS** (ἄλς, *als*, the sea ; οὐς, an ear) ; the *sea-ear* shell, commonly called in the Channel islands, where they abound, *ormer*, a corruption of *oreille de mer*.
- HALOCYON** (ἄλς, *hals*, the sea ; κυων, *cyon*, a dog) ; *sea-dog*. A species of the fossil fish Enchodus, or *spear-tooth*.
- HALOID SALTS** (ἄλς, *hals*, the sea ; εἶδος, *eidos*, form) ; an order of salts composed of a metal and of chlorine, iodine, &c., so named from being analogous in constitution to *sea-salt*.
- HAMITES** (*hamus*, a hook) ; *hook-shaped* shells, of a genus of cephalopoda.
- HASTINGS SANDS** ; a division of the Wealden rocks.
- HAYTOR** (British for *high hill*) ; a peak of Dartmoor, near Teignmouth, from which the famous Haytor granite is quarried.
- HEBREW OF GRAPHIC GRANITE** ; wherein the crystals of quartz are imbedded in the substance of the felspar like Hebrew characters.
- HELODUS** (ἥλος, *helos*, a stud ; οδους, *odous*, a tooth) ; *stud-toothed*. A genus of fossil fishes of Agassiz.
- HEMIPRISTIS** (ἡμισυ, *hemisu*, half ; πριστης, *pristes*, of a saw) ; *half-saw*. A genus of fossil fishes of Agassiz.
- HEMIPTERA** (ἡμισυ, *hemisu*, half ; πτερον, a wing) ; an order of insects so called from a peculiarity in their wings, the superior being coriaceous (or of leather) at the base, and membranous at the apex or point.

- HERBIVORA (*herba*, grass; *voro*, to eat); herbivorous animals, or those which live on grass.
- HETEROCERCAL (*ἕτερος*, *heteros*, other; *κερκος*, *cercos*, tail); *irregular or other shaped tail*. Agassiz's term, the contrary of homocercal (or regular tail). See the Penny Cyclo. for illustrations taken from Agassiz. Existing fishes have three regular patterns or forms of tail, and one peculiar and very irregular, viz. that of sharks. Every species of fossil fishes, however differing, found in strata older than the oolitic system, have the *irregularly* shaped tail, like our sharks, and are called *heterocercal* fishes. All recent fishes, with the exception of the lepidosteus osseus, or bony pike, sharks, and some others, are *homocercal*.
- HETERODERMA (*ἕτερος*, *heteros*, other; *δερμα*, *derma*, skin); *irregular skin*. A species of fossil fish, the Tetragonolepis of Agassiz.
- HETERODON (*ἕτερος*, *heteros*, other; *ὄδων*, *odon*, a tooth); *irregular toothed*. A species of the genus of fossil fishes, the Carcharias.
- HETEROPHYLLUS (*ἕτερος*, *heteros*, another; *φυλλον*, *phyllon*, a leaf); *having different foliage*. A term applied to an ammonite which is marked with foliage of two different forms.
- HETERURUS (*ἕτερος*, *heteros*, other; *ουρα*, *oura*, a tail); *irregular tail*. A species of fossil fish, the Leuciscus of Agassiz.
- HIPPOBOTAMUS (*ἵππος*, *hippos*, a horse; *ποταμος*, *potamos*, a river); *river horse*.
- HIPPOTHERIUM (*ἵππος*, *hippos*, a horse; *θηριον*, *therion*, a wild beast); *horse-beast*. An extinct fos-

sil quadruped, so called from being allied to the horse, found in the miocene period of the tertiary formation.

HIPPURITE LIMESTONE (hippurites, the name of a shell); that which abounds with the above shell; the upper part of the oolitic formation of the Pyrenees.

HOLOCENTRUM (ὅλος, *holos*, entire; κεντρον, *centron*, a goad); *entire-goad*. A genus of fossil ctenoïd fishes of Agassiz. A species is named *pygmæum*, or pigmy, found at Monte Bolca.

HOLOPTYCHUS (ὅλος, *holos*, all; πτυχη, *ptyche*, a fold); a genus of ganoïd fishes found in the carboniferous limestone.

HOMOCERCAL (ὅμος, *homos*, alike, or regular; κερκος, *cercos*, tail); *regular-tail*. Applied to recent fishes, except sharks, &c., by Agassiz, to distinguish them, by means of their tails, from the fossil fishes before the oolitic system, which were all, like our sharks, heterocercal, or having *irregular tails*. See **HETEROCERCAL**.

HOMOGENEOUS (ὅμος, *homos*, alike; γενος, *genos*, a kind); of the same kind or nature.

HOMOLONOTUS (ὅμος, *homos*, alike; ολος, *olos*, the whole; νωτος, *notos*, the back); *all the back alike*. A group of trilobites, so called because the tripartite character of the dorsal crust is in them almost lost.

HONEYCOMB DUN; a Devonshire name for a vesicular schistose trappean rock and trappean ash.

HORNBLÉNDE (German); a simple mineral of a dark green or black colour, which enters largely into

the composition of several varieties of the trap rocks.

HORN SILVER; muriate of silver resembling horn.

HOULLER (terrain); the French equivalent to our coal measures.

HORNSTONE; a siliceous mineral substance, sometimes approaching nearly to flint or common quartz. It has a conchoidal fracture, and is infusible, which distinguishes it from compact felspar.

HUMERUS (Lat. shoulder); the first bone of the front paddles of an ichthyosaurus or plesiosaurus, answering to the femur of the hind paddles.

HYÆNA (*ύαινα*, *hyæna*, from *ύς*, *hys*, a boar, from its having *pigs' bristles*, as it were, on its back); found in the pliocene formation, and in the ossiferous caverns, such as Kirkdale and Kent's Hole, &c. The *H. spelæa* (*σπηλαιος*, *spelaios*, of a cave); *prisca*, ancient; *dubia*, doubtful, &c., are among the fossil species.

HYBODUS (*ύβος*, *hybos*, crooked; *οδονς*, *odous*, a tooth); *crooked* or *bent tooth*. A genus of fossil placoid fishes of Agassiz. The whole skeleton has been reconstructed only from the lias of Lyme Regis and Bristol. There are twenty-two species from the new red sandstone to the chalk. There were two ichthyodorulites, or dorsal fins.

HYBRID (*ύβρις*, *hybris*, disgrace); the offspring of two animals of different kinds, as of the ox and horse, the horse and donkey.

HYDRAULICS (*ύδωρ*, *hydor*, water; *αυλος*, *aulos*, pipe); the science which treats of the *application* of water engines; while *hydrostatics* treats only

of the *properties* of water. Ammonites were provided with an *hydraulic* apparatus of nice operation and delicate adjustment, which enabled the creature to ascend from great depths.

HYDROGEN (ὕδωρ, *hydor*, water; γενναω, *gennao*, to generate); an elementary principle, with an acidifiable base. As the word implies, it is a constituent of water.

HYDROMETER (ὕδωρ, *hydor*, water; μετρον, *metron*, a measure); *water-measurer*. An instrument for determining the relative density or specific gravities of fluids.

HYDROPHYTES (ὕδωρ, *hydor*, water; φυτον, *phyton*, a plant); *water-plants*, or plants which grow in water.

HYGROMETER (ὕγρος, *hygros*, moist; μετρον, *metron*, a measure); *moisture-measurer*. An instrument to ascertain the quantity of aqueous vapour contained in the atmosphere.

HYLÆOSAURUS (ὕλη, *hyle*, a wood; σαυρος, *sauros*, a lizard); *forest lizard*, *lizard of the weald*, or *wealden lizard*; weald, from the Saxon, meaning a wood or forest. A fossil extinct reptile which blends the osteology of the crocodile with that of the lizard. This creature had many enormous angular spinous bones, which are supposed to have extended along its back like those of the recent *Cyclura*, so named from the form of its tail (κυκλος, *cyclos*, a circle; ουρα, *oura*, a tail).

HYMENOPTERA (ὑμην, *hymen*, a membrane; πτερον, *pteron*, a wing); insects whose wings are entirely membranous.

HYPERSTHENE (*ὑπερ*, *hyper*, above; *σθενος*, *sthenos*, strength); Labrador hornblendé. *Hypersthene* rock; a member of the trap group.

HYPOGENE (*ὑπο*, *hypo*, under; *γίνομαι*, *ginomai*, to be formed or produced); *nether-formed* rocks, or rocks which have not assumed their present form and structure at the surface, such as granite, &c. *Hypogene* is a term proposed by Lyell instead of *primary*, because some granites are of origin posterior to many secondary rocks.

HYPSIPRYMNUM (*ὑψος*, *hypsos*, height; *πρυμνος*, *prymnus*, extreme); height in *the extreme or hinder part*. The kangaroo rat.

HYPSODON (*ὑψος*, *hypsos*, height; *ὄδων*, *odón*, a tooth); *lofty-tooth*. A genus of fossil fishes of Agassiz of the cycloid order found at Lewes.

Haliotis; ear shell.

haliotoïdes; ear shell shaped.

harpula; a little harp.

hastatus; }
hastiformis, e; } dart-shaped.

haustellum; a little bucket.

hebetatus, a, um; blunt.

helicina; whorled, bent round.

helicoïdes; snail-like.

helicteres; ear-rings.

hemistoma; half-mouthed.

heterogeneous; irregular.

heterophyllus; irregular leaved.

hexagonus, a, um; six-sided.

hians; gaping.

hippocastanum; horsechestnut.

- hippocrepis; horseshoe.
 hippopodium; } horse's hoof.
 hippopus; }
 hispidus, a, um; hispid, covered with long rigid hairs.
 •hiulcus, a, um; gaping.
 Hyalæa; glassy.
 hybridus, a, um; hybrid.
 hymenophylloïdes; membranous leaf like.
 hypocrateriformis; salver-shaped.
 hystrix; a hedgehog.

I.

ICEBERG (German, *berg*, a hill); ice-hill, or mass of ice as large as a hill, which floats in the Polar Sea.

ICHNOLITE (*ιχνος*, *ichnos*, a footmark; *λιθος*, *lithos*, a stone); a stone retaining the impression of the *footmarks* of fossil animals.

ICHTHYOCOPRUS (*ιχθυς*, *ichthys*, a fish; *κοπρος*, *kopros*, excrement); *fish-excrement*. The beetle-stones of Scotland, used by lapidaries for ornaments, are of this nature.

ICHTHYODONTES (*ιχθυς*, *ichthys*, a fish; *οδους*, *ontos*, *odous*, a tooth); *fish-teeth*. The teeth of the family of sharks. Group 1. Cestracionts, says Dr. Buckland, have a broad grinding surface: they were called by Lwyd *siliquastra*, pod-shaped, and *rhombiscus*, rhombus-like. — 2. Those of the hybodonts were pointed, and striated on both sides: Lwyd styled them *plectronitæ* (*πληκτρον*, *plectron*, a cock's spur), cock's spurs, and *glossopetraæ*, tongue-stones. — 3. Those of true sharks

were triangular and striated on one side only : Lwyd called them glossopetræ. The families of sharks found beneath the chalk had teeth of greater strength, and were more flattened ; which had relation, Dr. Buckland says, most probably, to their office of crushing the hard coverings of the crustacea, and the *bony enamel* of the fishes which formed their food.

ICHTHYODORULITES (ιχθυς, *ichthys*, a fish ; δору, *doru*, a spear) ; *fish-spears*. Defensive fin bones of extinct fossil fishes. See Agassiz.

ICHTHYOÏD (ιχθυς, *ichthys*, a fish ; ειδος, *eidos*, form) ; *fish-like*. A part of the ichthyosaurus is formed on the *ichthyoid*, or fishy type ; part on the sauroïd type.

ICHTHYOLITE (ιχθυς, *ichthys*, a fish ; λιθος, *lithos*, a stone) ; a fish-stone, or fossil fish.

ICHTHYOLOGY (ιχθυς, *ichthys*, a fish ; λογος, *logos*, a discourse) ; a description of *ichthyolites*, or fossil fishes. This has now become a deeply interesting field of inquiry and study, owing to the publication of Dr. Louis Agassiz's work, "Recherches sur les Poissons Fossiles." He has divided fossil fishes into four orders.

1. The placoïds (πλαξ, *plax*, a plate) ; so named from having the skin covered irregularly with *plates* of enamel.
2. The ganoïds (γανος, *ganos*, splendour) ; having thick angular scales, very *brilliant* from the polish of the enamel.
3. The ctenoïds (κτεις, *cteis*, a comb) ; with scales jagged or pectinated like a *comb*.
4. The cycloïds (κυκλος, *cyclos*, a circle) ; with

scales smooth and simple at their margin, and more *circular* than those of the other orders. ICHTHYOSAURUS (*ιχθυς, ichthys*, a fish; *σαυρος, sauros*, a lizard); *fish-lizard*, a generic term given from its combining characteristics of a *fish* and a *lizard*. The range of the ichthyosaurus began with the muschelkalk, and extended through the whole oolitic period to the cretaceous formation. The great depository is Lyme Regis: the reason is, that a greater extent of lias is there acted upon by the tide, and men, who break up the ledges; and so enable Miss Anning to perambulate a fruitful superficial extent of three miles long by one eighth of a mile broad. The ichthyosaurus is one of the enaliosaurians, or marine lizards, and its general outline resembles that of the modern porpoise or grampus.

Mr. Hawkins, in his work on this animal and the plesiosaurus, rejects the specific terms of *communis*, *intermedius*, *platyodon* (flat tooth), and *tenuirostris* (slender jawed), and proposes the identification of the species by the paddle. Dr. Buckland has not followed him in his Bridgewater Treatise. His four species are as follow:—

1. *Chiroligostinus* (*χειρ, cheir*, hand; *ολιγος, oligos*, few; *οστεον, osteon*, bone); *paddle with few bones.*
2. *Chiropolyostinus* (*πολυς, polys*, many); *paddle with many bones.*
3. *Chirostrongulostinus* (*στρογγυλος, strongulos*, round); *paddle with round bones.*
4. *Chiroparamekostinus* (*παραμηκης, paramekes*, oblong); *paddle with oblong bones.*

Enough has been written on this wonderful animal to fill a volume. An account of the surprising contrivances, so perfect in the adaptation of each subordinate part to the harmony and perfection of the whole, is among the most interesting matter for reading and consideration that is anywhere to be met with.

A Synopsis of the Names of the Bones of the Ichthyosaurus used by comparative anatomists, in the order they are described in the work of Thomas Hawkins, Esq. F.G.S.

THE HEAD.

Superior Jaw.

- 2 Maxillary (*maxilla*, a cheek).
- 2 Intermaxillary (*inter*, between, *maxilla*).
- 2 Nasal (*nasus*, a nose).

Cranium (skull).

- 2 Anterior frontal (*anterior*, front; *frons*, the forehead).
- 2 Median frontal (*medius*, middle).
- 2 Posterior frontal (*posterior*, more behind).
- 2 Jugular (*jugulum*, the throat).
- 2 Lachrymal (*lachryma*, a tear).
- 2 Temporal (*tempora*, the temples).
- 2 Mastoïdean (*μαστος*, *mastos*, a nipple; *ειδος*, *eidos*, form); nipple-like.
- 2 Tympanal (*τυμπανον*, *tympanum*, a drum).
- 2 Parietal (*paries*, a wall).
- 1 Superior occipital (*occiput*, the back of the head).
- 1 Inferior occipital (*inferior*, lower back of the head).
- 2 Lateral occipital (*latus*, side back of the head).
- 2 External occipital (*externus*, outward).
- 1 Sphenoid (*σφηνος*, *sphenos*, a wedge); wedge-shaped.
- 2 Pterygoïd (*πτερυξ*, *pteryx*, a wing); wing-shaped.
- 19 Sclerotic plates of the eye (*σκληρος*, *skleros*, hard).

Inferior Jaw.

- 2 Dental (*dens*, a tooth).
 - 2 Opercular (*operculum*, a lid or cover).
 - 2 Angular.
 - 2 Surangular (*sur*, above).
 - 2 Articular (*articulus*, a little joint).
-
- 47 Bones, exclusive of the sclerotic plates of the eye.
- Teeth from 40 to 50 on each side of superior jaw.
 — from 30 to 35 on each side of inferior jaw.

SPINAL COLUMN.

- Vertebræ (*verto*, to turn): —
- | | | |
|---|---|------------|
| Dorsal (<i>dorsum</i> , a back) vertebræ, about 38 | } | about 150. |
| Caudal (<i>cauda</i> , a tail) vertebræ, about 112 | | |

RIBS.

On each side 44.

PELVIS.

- 2 Iliæ (haunch bone)
- 2 Ischia (hip bone).
- 2 Pubes (share bone).

EXTREMITIES.

- Scapula (shoulder blade).
- Clavicle (collar bone).

PADDLES.

(Showing the corresponding bones in the fore and hind paddle.)

	FORE PADDLE.	HIND PADDLE.
	Humerus (shoulder)	Femur (thigh).
	Radius. Ulna	Fibula. Tibia.
	(same names as the two bones of the fore arm of animals.)	(same names as the bones of the leg of animals.)
Q	Carpus (wrist)	Tarsus (first part of foot).
	Scaphoid. Cuneiform. Pisiform	Scaphoid. Cuboid. Calcis.
+	(σκαφή, skaphē, skiff; cuneus, wedge; πισον, pison, pea).	(skiff-shaped; κούος, kúos, cube; calx, heel).
	Trapezium. Trapezoid. Unciform	External cuneiform. Middle C. Internal C.
	(τραπέζα, trapeza, table, table-like; uncus, a hook.)	(cuneus, a wedge; forma, shape).
	Meta-carpus	Meta-tarsus.
	(μετα, meta, beyond).	
	The outside carpus.	The outside tarsus.
	1st, 2d, 3d meta-carpal bones	1st, 2d, 3d, 4th meta-tarsal bones.
	Phalangeal rows	Phalangeal rows.
	(φάλαγγες, phalanges, spaces between the finger joints.)	
	37 Phalangeal bones	29 Phalangeal bones.

- IGNEOUS** (*igneus*, fiery) rocks; all such as lava, trap, and granite, known or supposed to have been melted by volcanic *fire* or heat.
- IGUANA** (Spanish); name of an American land lizard from three to five feet in length, which feeds on insects and vegetables, and climbs trees.
- IGUANODON** (Iguana, the lizard so called; *odon*, *odon*, a tooth); a colossal fossil lizard about seventy feet long, having the *teeth* of the iguana, found in the Kentish rag near Maidstone.
- IMBRICATED** (*imbrex*, a gutter tile); laid one over the other as gutter tiles or scales, as in the armadillo.
- INCANDESCENT** (*candescere*, to begin to grow *white*); having a *white* heat, a more intense degree of heat than red heat.
- INCISORS** (*in*, in; *cædo*, to cut); cutting teeth.
- INDUCTION** (*inductio*, a leading in). A consequence, inference, or general principle drawn from a number of particular facts or phænomena. Ex. On observing the vertebræ, paddles, and bones of the fossil remains of the animal called an ichthyosaurus, their agreement one with another, and proportions, we infer by *induction* that the animal lived and had the faculty of locomotion, &c.
- INDURATED** (*durus*, hard); hardened.
- INDUSIÆ** (Lat. clothes put on); caddis-like coverings.
- INDUSIAL** (*indusiæ*, clothes put on); formed from the cases or caddis-like coverings of insects. This term is applied to a limestone of the tertiary

formation in Auvergne, several feet in thickness, almost entirely made up of the *indusie*, like the cases that inclose the larvæ of our common May-fly.

INFEROBRANCHIA (*inferus*, low ; *βραγχια*, *branchia*, gills); Cuvier's third order of gasteropods, as the *linguella*.

INFUSORIA (*in*, in ; *fundo*, to pour); animalculæ, little creatures, the atoms or smallest parts of animal existence, so called, because many species abound in vegetable *infusions*, and particularly in stagnant waters. There are many distinct families of the infusoria, and some are of very complex organisation, and possess shields or coverings of various textures. The tripoli of Bilin in Bohemia consists almost entirely of the siliceous remains of infusoria of a species so minute, that a cubic inch of stone contains upwards of 41,000,000 of these skeletons. Professor Ehrenberg has been a great discoverer.

INJECTED (*injicio*, to throw in) rocks, or *intruded* (*in*, in ; *trudo*, to thrust) rocks ; such as granite, sienite, porphyry, serpentine, and greenstone, which have been forced, when in a state of fusion, through the stratified rocks.

INK BAGS, fossil; the sacs of sepia found in a fossil state in the lias, of which such beautiful copies are to be seen in Professor Buckland's *Bridgwater Treatise*. Miss Anning works up for friends the sepia of these bags, and beautiful drawings have been made from it.

INK BAGS, recent; the sacks containing the ink, or brown colouring matter, well known as *sepia*,

of the common calmar, or squid (*Loligo vulgaris Lam.*, *Sepia Loligo Linn.*)

IN SITU (Lat.); in its situation or bed. Few, comparatively, have had the gratification of seeing any of the great fossil animals *in situ* at Lyme Regis, though they may have viewed the result of Miss Mary Anning's discoveries in museums.

INSPISSATED (*spisso*, to thicken); thickened.

INTERMAXILLARY (*inter*, between; *maxilla*, a cheek bone); situated between the cheek bones.

INTUMESCE (*intumesco*, to begin to swell); to swell as zeolite does under the blowpipe.

INVERTEBRATA (*in*, without; *vertebra*, a back bone); animals without a back bone, composed of vertebræ, or turning bones, as worms.

IODINE (*ιωιδες*, *ioeides*, violet-coloured); one of the elementary principles, supporters of combustion.

IRIDESCENCE (*iris*, the rainbow); the production of prismatic colours occasioned by the refraction of light from internal surfaces. *External iridescence*, denominated *tarnish*, is derived from acidiferous fumes; more frequently from partial decomposition.

IRIDESCENT (*iris*, the rainbow); having somewhat the colours of the rainbow. A term applied to the nacre, or mother of pearl of the sepia, found in the lias.

IRIDIUM (*iris*, the rainbow); an elementary principle, classed as one of the noble metals, so called from the variety of colours assumed by some of its salts.

ISOGEOHERMAL LINES (*ισος*, *isos*, equal; *γη*, *ge*, the earth; *θερμη*, *therme*, heat); a term given to

curved lines connecting points of equal temperature in the interior of the earth, as distinguished from lines which connect points of equal temperature on the *surface* of the globe, called *isothermal* lines.

ISOTHERMAL (*ισος, isos*, equal; *θερμη, therme*, heat); *equally warm*. Lines traced on a globe, and passing through places and countries where the temperature is the same throughout the year, are called *isothermal*.

Isocardia; equal heart.

imbricatarius, a, um; covered with tiles.

imbricatus, a, um; imbricated, like tiles lapping over.

impressus, a, um; stamped.

inæquicostatus; unequally ribbed.

inanis, e; void.

incisus, a, um; incised, cut in.

incrassatus, a, um; thickened.

incurvus, a, um; bent in.

infundibuliformis, e; funnel-shaped.

ingens; great.

interstinctus, a, um; divided.

intortus, a, um; twisted inwards.

intumescens; swelling.

isogonoïdes; equiangular-like.

J.

JADE; a kind of steatite called pagodite, or the figure stone of the Chinese.

JASPER; a precious greenstone generated from

shale and sandstone by the injection of the igneous rocks.

JET; a lignite, hard, compact, with pitchy lustre, the finer sorts of which are used for the manufacture of trinkets, &c.

JULI (*ιωλος, ioulos*); catkins of trees.

JULO-EIDO-COPROLITES (*ιωλος, ioulos, catkin; ειδος, eidos, form*); a name given, from their resemblance, to the coprolites of some unknown animals.

JURA KALK (German); *Jura limestone*. French *Calcaire de Jura*, or *Jurassique*. Equivalent to our oolitic formation.

JURA LIMESTONE (*Jura*, mountains of, between France and Switzerland). The limestones belonging to the oolitic group constitute the chief part of these mountains. Hence the geologists of the Continent have given the name to the group. The German term is *Jura kalk*.

K.

KAOLIN (Chinese term); *porcelain clay*. A large tract of kaolin occurs near St. Austle, in Cornwall, from which the porcelain manufactory of Worcester is supplied. It is generally supposed to be derived from the decomposition of the felspar of granitic rocks.

KÄPFNACH, near Zürich; the site of a celebrated deposit of lignite, containing mastodons, rhinoceros, &c., covered by freshwater limestone of the eocene formation.

KARPHOLITE (*καρφος, karpchos, a mote; λιθος,*

lithos, a stone); *mote-stone*. A mineral which occurs in minute or *mote-like* crystals, and in stellated silky fibres.

KATACLYSM (*κατακλυσμος*, *kataclysmos*, a deluge); the deluge.

KELLOWAY ROCK; a member of the oolitic group, so named from a well-known locality, Kelloway-bridge, Wiltshire.

KENT'S HOLE, near Torquay, Devonshire; an ossiferous cavern of the transition limestone.

KENTISH RAG; a provincial term for the hard, grey, arenaceous limestone of the green sand formation, much used for building in Kent and Sussex.

KERATOPHAGUS (*κερας*, *keras*, a horn; *φαγω*, *phago*, to eat); *horn-eating*.

KIESELGUHR (German, *stone* or *gravel fermentation*); a substance like siliceous paste, analogous to the bergmehl (or mountain-meal) of Lapland, found to contain infusoria.

KILLAS; a local Cornish term for what geologists term clay slate and grauwacke slate rocks, and which Dr. Borlase terms Cornubianite, from *Cornubia*, Cornwall. The tin and copper veins of Cornwall abound in the killas and the contiguous granite, which appears to have altered the former, and caused it to become metamorphic or changed.

KIMMERIDGE CLAY; a very thick bed of blue clay, an argillo-calcareous deposit of the oolitic group, so named from its principal locality in the Isle of Purbeck.

KIRKDALE CAVERN; in the oolitic limestone of

Kirkdale, near Kirkby Moorside, Yorkshire. This famous cave had a level floor 245 feet long, with a height varying from 3 to 6 feet. The bones found were those of the hyæna, elephant, rhinoceros, hippopotamus, &c. Dr. Buckland, in his *Reliquiæ Diluvianæ*, considers this cave to have been a den of hyænas, who dragged in the bodies of animals which frequented the vicinity. The fame of this cave led to great discoveries.

KÜHLOCK, near Rabenstein, in Franconia, on the bank of the Esbach; the most remarkable ossiferous cave Dr. Buckland has examined. The cave is of the size of a large church, and contains 5000 cubic feet of black animal dust.

KUPFERSCHIEFER (*kupfer*, copper; *schiefer*, slate,—both German); *copper slate*. A bituminous marl slate; the upper new red sandstone at the base of the magnesian limestone of Thuringia, impregnated with copper, and richly stored with palæonisci and other fossil fishes. The equivalent beds in England, at Ferryhill in Durham, and at Whitley in Northumberland, are called marl slate. See Penny Cycl.

KURZAWKA; the Polish term for an equivalent to the weald clay and iron sand of England.

L.

LABRAX (*λαβρος*, *labros*, voracious); a genus of fossil fishes of Agassiz, so called from their resemblance to the percidæ or perch family, the scientific name of which is the same,

LACERTA (Latin); a lizard.

- LACUSTRINE** (*lacus*, a lake); belonging to, or formed in a lake. The district of Auvergne, in Central France, presents an instance of a *lacustrine* deposit twenty miles in width and eighty in length, within which strata of gravel, sand, clay, &c. have been accumulated by the operations of fresh (or *lake*) water.
- LAGOMYS** (*λαγως*, *lagos*, a hare; *μυς*, *mys*, a rat or mouse); an animal in character between a hare and a rat.
- LAMANTINE**; a living specimen of the herbivorous cetacea, or whale tribe, which inhabits the mouths of rivers on the coasts of Africa and South America. The sea cow.
- LAMELLA** (Latin); a very thin plate, as of metal.
- LAMINA** (Latin); a thin plate, as of metal.
- LAMNA** (a thin plate of metal, also the ancient name of fish); a genus of fossil fish of the placoid order, found in the chalk. There are the *Lamna appendiculata*, *acuminata*, *Mantellii*, and *crassissima*.
- LANDSLIP**; a portion of land that has slid down in consequence of disturbance by an earthquake, or from being undermined by water washing away the lower beds which supported it.
- LAPIDIFICATION** (*lapis*, a stone; *fio*, to be made); conversion into stone.
- LAPILLI** (*lapillus*, a little stone); small volcanic cinders.
- LAPILLO** (Italian); a volcanic product.
- LAPIS OLLARIS** (Latin); *pot-stone*. Called by Pliny *lapis Comensis*, or Como stone, from its

being exported from the Lake of Como. It stands the fire.

LATIMANUS (*latus*, broad; *manus*, a hand or fin); *broad-finned*. A species of the fossil fish pholidophorus.

LAVA (Italian); melted mineral substance erupted from a volcano, which soon cools externally, and as it is a bad conductor of heat, the internal mass remains liquid long after the crust has become solid. There is in lava every degree of variation; some specimens being of granitic, others of earthy, compact, resinous, or vitreous texture.

LEECH (Fossil); a local term for the palate of a fossil fish, the *Acrodus nobilis*.

LEIACANTHUS (*λειος*, *leios*, smooth; *ακανθα*, *acantha*, a shine); *smooth-spined*. A genus of fossil fishes, of which ichthyodorulites are found in the muschelkalk.

LEIOSOMUS (*λειος*, *leios*, smooth; *σωμα*, *soma*, a body); *smooth-bodied*. A species of the fossil ganoid fish, the tetragonolepis.

LEPIDODENDRON (*λεπις*, *lepis*, a scale; *δενδρον*, *dendron*, a tree); *scaly-tree*. A genus comprehending many species of fossil plants, the second most abundant class of fossils in the coal formation of the North of England. The stems are covered with scars like scales.

LEPIDOÏDS (*λεπις*, *lepis*, a scale; *ειδος*, *eidōs*, form); a family of fossil fish with large rhomboidal bony scales. These Dr. Buckland considers may have been given them to defend their bodies against warm waters or changes of temperature.

- LEPIDOPHYLLUM (λεπις, *lepis*, a scale; φυλλον, *phyllon*, a leaf); *scale-leaf*. Fossil leaves of the coal formation.
- LEPIDOPTERA (λεπις, *lepis*, a scale; πτερον, *pteron*, a wing); *scaly-wing*. Insects with scaly wings.
- LEPIDOSTROBUS (λεπις, *lepis*, a scale; στροβιλος, *strobilos*, a round top); the name of fossil fruit supposed to be of the lepidodendron, found in the coal formation.
- LEPTACANTHUS (λεπτος, *leptos*, slight; ακανθα, *acantha*, a thorn); *slight-spine*. A genus of fossil fishes, of which the ichthyodorulites are found in the lias.
- LEPTOLEPIS (λεπτος, *leptos*, slight; λεπις, *lepis*, a scale); *slight-scale*. A genus of fossil fishes of Agassiz, from the lias of Neidingen.
- LEPTOSOMA (λεπτος, *leptos*, slight; σωμα, *soma*, a body); *slight-bodied*. A species of the fossil fish tinca, or tench.
- LEUCISCUS (λευκος, *leucos*, white); *white fish*, or mullet. A genus of fossil fishes of Agassiz. A species is called *papyraceus*, or paper-like, from being found in the *papier-kohl*, paper coal of the Rhine.
- LEUCITE (λευκος, *leucos*, white); a simple mineral, found in volcanic rocks, crystallised, and of a *white* colour.
- LIAS (a provincial term for, and western mode of pronouncing *layers*); a series of clays, shales, and limestones, with marine shells, cephalopoda, crinoïdea, and fishes; reptiles, particularly of two extinct genera, the plesiosaurus and ichthyosaurus, in immense quantities; drifted wood and

plants. The lowest member of the oolitic series. The local term *lias* was applied to the calcareous beds; the thick argillaceous deposits, now distinguished as the upper *lias*, was called *blue marl*. The lime made from the *blue lias* stone has the valuable property of setting in water. The best comes from Lyme Regis, and Aberthaw in South Wales. The *lias* formation is called by the French *calcaire à gryphite*, and by the Germans *gryphiten kalk*, from the number of gryphites found in it.

LICKS; an American term given to boggy grounds affording salt from salt springs, because the cattle go down to *lick* the salt there. These are called in Brazil *carrieros*. In Big Bone Lick, in Kentucky, are found bones of the great animals of the extinct species, the mastodon, &c.

LIGNIFICATION (*lignum*, wood; *fit*, to become); a becoming, or being converted into wood.

LIGNIPERDOUS (*lignum*, wood; *perdo*, to destroy); *wood-destroying*. The *goat moth* is a *ligniperdous* insect. Its scientific name is *Coccus ligniperda*.

LIGNITE (*lignum*, wood); fossil *wood*, *partially* carbonised, or converted into coal, but retaining its woody texture; whereas coal is vegetable matter *entirely* carbonised. Lignite, or brown coal, is also known under the terms, jet, surturbrand, moor coal, Bovey coal, Cologne earth, and basaltic coal. Amber is procured from beds of lignite. The plants of which lignite is composed are terrestrial.

LINE; the twelfth part of an inch.

LITHIUM (*λίθειος*, *litheios*, stony or earthy); an ele-

mentary principle, with an alkalifiable base, so named because first obtained from an *earthy* mineral.

- LITHODOMI** (λιθος, *lithos*, a stone; δέμω, *demo*, to build); *stone-building animals*, which bore into stone, such as the *pholades*, or hack fish. The columns of the submerged temple of Serapis were pierced by the *modiola lithophaga*, one of the lithodomi, which are also called *lithophagi*, or stone-eaters, though Mr. Lyell says the holes are not perforated mechanically, but appear to have been dissolved.
- LITHOGENOUS** (λιθος, *lithos*, a stone; γεννᾶω, *gennao*, to produce); *stone-forming*. *Lithogenous polyyps*; animals which form coral.
- LITHOGRAPHIC** (λιθος, *lithos*, stone; γραφῶ, *grapho*, to write) stone; such as is used for chemical drawing. A celebrated kind exists at Solenhofen.
- LITHOIDAL** (λιθος, *lithos*, a stone; εἶδος, *eidos*, form); having a *stony* structure.
- LITHOPHAGI** (λιθος, *lithos*, a stone; φάγω, *phago*, to eat); *stone-eaters*. Molluscous animals which form holes in solid stones.
- LITHOPHYTES** (λιθος, *lithos*, stone; φυτόν, *phyton*, a plant); a name given to corals, as being *stony* plants.
- LITUIE** (*lituus*, a crooked trumpet); a trumpet-shaped chambered shell of some cephalopod or mollusc, as is supposed, found in the transition limestone, the silurian and older systems.
- LIVRAISON** (French, *livrer*, to deliver or present); a part of a work delivered, equivalent to our

numbers or parts. Agassiz's great work on fossil fishes is published in *livraisons*, numbers or parts.

LOAM; a soil composed of various earths, such as siliceous sand, clay, and carbonate of lime or chalk.

LODE; a miner's term for *vein*.

LOLIGO (Lat.); the cuttle-fish. *L. vulgaris*, the calmar or squid, the Sepia Loligo of Linnæus. See Loligo Aalensis, in Bridge. Treat. From the fossil ink bags, colouring matter for drawings is procured similar to that from recent specimens.

LONCHOPTERIS (λογχη, *lonche*, a lance; πτερον, *pteron*, a wing); *lance-winged*, a genus of fossil plants, so named by Brongniart.

LONDON CLAY; the tertiary formation on which the metropolis stands, and its vicinity, commonly styled the London Basin. The terms of the series are as follow:—

Upper Part. — *Bagshot sand*, in which remarkable fishes have been noticed by Dr. Buckland.

Middle Part. — *London clay*, containing a few bands of sand, nodules of septaria, and marine shells.

Lower Part. — *Plastic clay and sands*. Various coloured clays and sands, with lignite, and marine, æstuary, and freshwater shells. (See Penny Cyc.) London clay is equivalent to the *calcaire grossier* of the French.

LONGIROSTRIS (*longus*, long; *rostrum*, a beak); *long-beak*. A species of pterodactyle.

LOPHIODON (λοφος, *lophos*, a crest; οδους, *odous*, a tooth); *crested tooth* animal. A genus of extinct

quadrupeds, allied to the tapir, named from transversal *eminences* on the teeth. Fifteen species are recorded.

LOPHOBANCHII (λοφος, *lophos*, a crest; βραγχια, *branchia*, gills); Cuvier's fifth order of fishes, with *crested* gills. The hippocampus is an example.

Löss (German); a provincial term for alluvial tertiary sedimentary deposits, where the Rhine appears to have been dammed up in geological periods, which contains bones of many extinct animals. The löss, which is more than 200 feet thick, is called in Alsace the *lehm*, or loam. This subject is highly interesting.

LUDLOW ROCK; a member of the upper portion of the grauwacke group; so called by Mr. Murchison because the Castle of Ludlow stands upon it. There is the upper Ludlow rock, and the lower Ludlow rock, called the Die Earth.

LUMBAR (*lumbus*, the loin) vertebra; a vertebra from the region of the loins.

LYCOPODIACEÆ; plants of an inferior degree of organisation to coniferæ, some of which they very much resemble in foliage, but all recent specimens are infinitely smaller. Their mode of reproduction is analogous to that of ferns. In English they are called *club-mosses*, and are generally found in mountainous heaths in the North of England.

LYDIAN STONE, or BASANITE (βασανος, *basanos*, proof, trial); the Lydius lapis of Pliny, so named because first brought from Lydia; a kind of quartz or flint allied to hornstone, but of a greyish

black colour. It was at first used for trying gold by a comparison of colours, thence called *touchstone*, or *basanite*.

- labiatus, a, um ; labiate, having lips.
 lacerus, a, um ; torn.
 laciniatus, a, um ; slashed.
 lacteus, a, um ; milky.
 lacunosus, a, um ; having deep depressions.
 læviceps ; smooth headed.
 lævigatus, a, um ; polished.
 læviusculus ; rather smooth.
 lamellosus, a, um ; in very thin plates.
 laminatus, a, um ; in thin plates.
 lanceolatus, a, um ; spear-shaped.
 latecauda ; broad tailed.
 laticostatus, a, um ; broad ribbed.
 latidens ; broad toothed.
 latifolia ; broad leaved.
 latissimus, a, um ; broadest, very broad.
 latus, a, um ; broad.
 lautus, a, um ; } washed.
 lavatus, a, um ; }
 lemniscatus, a, um ; labelled.
 lenticularis, e ; } lens-shaped, having a double
 lenticulatus, a, um ; } convex surface.
 lenticulinus, a, um ; lentil-shaped.
 lentiformis, e ; lens-shaped.
 lentus, a, um ; slow.
 lepidotus, a, um ; leprous, covered with minute pel-
 late scales.
 lichenoïdes ; lichen-like.
 lignarius, a, um ; of wood.

- ligulatus, a, um ; strap-shaped.
 lima ; a file.
 limbatus, a, um ; bordered.
 lineatus, a, um ; marked with lines.
 lineolatus, a, um ; marked with little lines.
 linguatula ;
 linguiformis ; } tongue-shaped.
 lingulatus, a, um ; }
 lituiformis, e ; clarion-shaped.
 lobatus, a, um ; lobate, partly divided with a deter-
 minate number of segments.
 loculosus, a, um ; partitioned.
 longimanus ; long handed.
 lophiodon ; crested tooth.
 loricatus, a, um ; loricated, resembling a coat of
 mail.
 lunulatus, a, um ; half moon shaped.
 lyratus, a, um ; lyre-shaped.

M.

MACHAIRODUS (*μαχαίρα, machaira*, a knife ; *ὄδους, odous*, a tooth) ; an extinct genus of fossil quadruped, allied to that species of bear called the *knife-toothed (cultridens)*, from which this animal takes its Greek name *machairodus*, or *knife-toothed*, found in strata of the miocene period of the tertiary formation.

MACIGNO. An Italian name for a siliceous sandstone, sometimes containing calcareous grains, mica, &c. of that country.

MACLE ; the intersection of two crystals.

MACRAUCHENIA (*μακρος, makros*, long ; *αυχην, αυχην*,

auchen, a neck); *long-neck*. An extinct mammiferous animal, found near Port St. Julian, so named by Professor Owen.

MACROLEPIDOTUS (μακρος, *makros*, long; λεπις, *lepis*, a scale); *long-scaled*. A species of the genus of fossil fishes dipterus, or *two-finned*.

MACRONYX (μακρος, *makros*, long; ονυξ, *onyx*, a claw); *long-claw*. Applied to a species of pterodactyle.

MACROPHTHALMUS (μακρος, *makros*, long; οφθαλμος, *ophthalmus*, an eye); *long-eyed*. Applied to a species of calymene, a trilobite.

MACROPOMA (μακρος, *makros*, long; πωμα, *poma*, a lid or cover, in Latin *operculum*); *long-lid*, or gill-cover. A remarkable genus of fossil fishes of the ganoid order, so named from the very large *operculum*, or lid, or *gill-cover*. Every scale in this fish appears to have possessed a mechanism for the flow of a fluid to lubricate the surface of the body. This is the only genus yet found in the chalk of England.

MACROPTERUS (μακρος, *makros*, long; πτερον, *pteron*, a wing or fin); *long-finned*. A species of the genus *Cyclarthrus* (*circular joint*), a fossil fish of Agassiz.

MACROPYGOPTERUS (μακρος, *makros*, long; πυγων, *pygon*, a cubit; πτερον, *pteron*, a wing or fin); *long cubit-finned*. A species of the fossil fish dipterus, or two-finned.

MACROSPONDYLUS (μακρος, *makros*, long; σπονδυλος, *spondylus*, a vertebra of the back); *long-spine*. A reptile found at Boll, marked in De la

Bêche's Manual as being the *Crocodylus Bollen-*
sis of Jäg.

MACROSTOMUS (*μακρος, makros*, long; *στομα, stoma*, a mouth); *long-mouth*. A species of the genus of fossil fish amblyurus, or *blunt-tail*.

MACROTUS (*μακρος, makros*, long; *ους, ous*, an ear); *long-eared*. A species of the genus of fossil fishes, the otodus.

MACROUROUS (*μακρος, makros*, long; *ουρα, oura*, a tail); *long-tailed*. A term applied to a decapod. There is a species of smerdis, a fossil fish, called macrurus. Crustacea with a long tail, such as the lobster, are termed macrurous, to distinguish them from the brachyurous, or short tailed, as the crab.

MADREPORE; a genus of corals, but generally applied to all the corals distinguished by superficial *star-shaped cavities*. There are several fossil species.

MAGNESIAN LIMESTONE; an extensive series of beds immediately above the coal measures; so called because the limestone, the principal member of the series, contains much of the earth magnesia as a constituent part. The French equivalent is calcaire alpin, zechstein.

MALACOLOGIST; a writer on the malacostracia.

MALACOPTERYGII (*μαλακος, malakos*, soft; *πτερυξ, pteryx*, a wing or fin); fishes with *soft* articulated radii in the dorsal *fins*, and with bony skeletons. One of the grand primary divisions of Cuvier. The salmon is an example.

MALACOSTRACIA (*μαλακος, malakos*, soft; *crustacea*,

- creatures with crust or coating); *soft crustacea*. A section of Cuvier's crustacea, of which the *Gebia stellata* is an example.
- MALLOTUS** (*μαλλος, mallos, a fleece*); *hairy*. A genus of fossil fishes of Agassiz.
- MALM ROCK**; a provincial term for the upper green sand.
- MAMMALOGY** (*mamma, a teat; λογος, logos, discourse*); the science which aims at the description of animals with *mammæ*, or teats. This term is also rendered by mastology and mastozoology.
- MAMMIFER** (*mamma, a teat; fero, to bear*); an animal that has teats. To this class all the warm-blooded quadrupeds and whales belong.
- MAMMILLARY** (*mammilla, a little breast*); studded over with rounded projections like breasts.
- MAMMOTH** (Tartar word, used in Siberia, says Mr. Lyell, for animals that burrow under ground); an extinct species of the elephant (*E. primigenius*), of which the fossil bones are frequently met with in various countries.
- MANATI**; one of the cetacea, the sea cow or lamantine (*Trichecus Manatus* Lin.).
- MANSFIELD, THURINGIA**; bituminous slate, a celebrated deposit of fossil fishes.
- MARL**; a mixture of clay and lime, usually soft, but sometimes hard, in which case it is called indurated (*duro, to harden*) marl.
- MARSUPITES** (*μαρσυπιον, marsupion, a purse*); a curious extinct genus of animals allied to the crinoidea, or lily-shaped animals; so named by

Miller, from their bearing some resemblance to a *purse*. The marsupite was a molluscos animal of a subovate form, having the mouth in the centre, and surrounded by arms or tentacula.

MARSUPIUM (Lat.); a purse or pouch. *Marsupial animals*; a tribe of quadrupeds, of which the kangaroo is a well-known example, that have a pouch under the belly, in which they carry their young.

MASTODON (*μαστος*, *mastos*, the breast; *οδων*, *odon*, tooth); a genus of fossil extinct quadrupeds allied to the elephants; so called from the form of the hind *teeth*, or grinders, which have their surface covered with conical *mammillary* crests. There are the *M. maximus*, *greatest*; *angustidens*, *narrow tooth*.

MASTODONSAURUS (*μαστος*, *mastos*, the breast; *οδων*, *odon*, a tooth; *σαυρος*, *sauros*, a lizard); the *mammillary toothed lizard*. A genus of fossil saurians. A species is named *M. Jægeri*.

MATRIX (Lat. womb); the enveloping stone or material of bone or shell, which, if not detached, is said to be in its matrix or gangue (a German term).

MEANDRINA (*Mæander*, a serpentine river in Phrygia); a genus of corals, so called from their having *meandering* cells, as the brain-stone coral.

MECHANICAL ORIGIN, ROCKS OF; rocks composed of sand, pebbles, or fragments, as on a small scale man might do by art or contrivance (*μηχανη*, *mechane*), are so named, to distinguish

them from rocks of a uniform crystalline texture, which are of chemical origin.

MEDUSÆ (*Medusa*, whose hair was turned into snakes by Minerva); a genus of marine radiated animals, without shells; so called because their organs of motion spread out like the snaky hair of the fabulous *Medusa*.

MEGALODON (*μεγας*, *megas*, great; *οδους*, *odous*, a tooth); *great-tooth*. A genus of fossil fishes of the cycloid order, found in the chalk. Also a species of the genus *carcharias*.

MEGALONYX (*μεγας*, *megas*, great; *ονυξ*, *onyx*, a claw); *the animal with great claws*. A fossil animal of colossal proportions, related to the sloth, and first discovered by the American President Jefferson. Bony polygonal scales were found in masses with the bones of this animal, which is supposed to have been covered with an armour resembling that of the armadillo.

MEGALOSAURUS (*μεγας*, *megas*, great; *σαυρος*, *saurus*, a lizard); *the great lizard*. A fossil gigantic amphibious animal of the saurian and lizard and crocodile tribe.

MEGALOTIS (*μεγας*, *megas*, great; *ους*, *ous*, an ear); *great-ear*. A species of the genus of fossil fishes, the *carcharias*.

MEGAPHYTON (*μεγας*, *megas*, great; *φυτον*, *phyton*, a plant); *great plant*. One of the five genera of fossil plants which have *scars* arranged in vertical rows.

MEGATHERIUM (*μεγας*, *megas*, great; *θηριον*, *therion*, a wild beast); *the great beast*. A fossil extinct quadruped resembling a gigantic sloth.

MELASTOMA (*μελας, melas, black; στομα, stoma, a mouth*); *black mouth plant*, because the fruit of one of the species stains the lips. A genus of melastomaceæ, an order of exotic plants of the evergreen tree and shrubby kinds.

MESOTYPE (*μεσος, mesos, middle; τυπος, typos, type*); a simple mineral, white and needle-shaped. One of the zeolite family, frequently met with in the trap rocks.

META-CARPAL (*μετα, meta, after or beyond; καρπος, carpos, the wrist*) bones or plates; the row of four *beyond* the two rows called the *carpus* in the *front* paddle of an ichthyosaurus or plesiosaurus, and which correspond with the meta-tarsal bones of the hind paddle.

META-TARSAL (*μετα, meta, after or beyond; ταρσος, tarsos, the tarsus of the foot*) bones or plates; the row of four *beyond* the two rows called the *tarsus* in the hind paddle of an ichthyosaurus or plesiosaurus, and corresponding with the meta-carpal bones of the *front* paddle.

METAMORPHIC (*μεταμορφωω, metamorphoo, to change*) rocks; altered stratified primitive rocks.

METEORITES (*μετεωρα, meteora, meteors*); mineral masses which fall from the atmosphere.

MÈTRE (*μετρον, metron, a measure*); the fundamental unit of the metrical system of France, being the ten millionth part of the quadrant of the terrestrial meridian from the equator to the North pole, which passes through Paris, and is equivalent to 3 feet 3 inches 4 lines English.

From the mètre, all other measures of length are derived by decimal arithmetic.

Deca-mètre = 10 times the mètre.

Hecto-mètre = 100 times the mètre.

Kilo-mètre = 1000 times the mètre.

Myria-mètre = 10,000 times the mètre.

Deci-mètre = 10th part of a mètre.

Centi-mètre = 100th part of a mètre.

Milli-mètre = 1000th part of a mètre.

N.B. Deca and deci, from *δεκα*, *deka*, ten; hecto, *ἑκατον*, *hecaton*, hundred; kilo, *χιλιοι*, *chilioi*, 1000; myria, from *μυριοι*, *myrioi*, 10,000.

MIALLET, CAVERN OF, near Anduze, department of the Gard, France; in Dolomitic rock subordinate to the lias, ninety feet above the valley. Beneath stalagmite, says De la Bèche, human remains were discovered in different parts of the cavern, mixed with those of bears. At the inmost end, the remains of these animals prevailed; at the mouth, those of men. A lamp, copper bracelets, worked bones, and flint tools were discovered. M. Tessier, who has described the cavern, infers,—1. An epoch when the cavern was inhabited by bears; 2. A time when man, little advanced in civilisation, inhabited and, probably, was buried in the cave; 3. The Roman epoch, shown by the remains of more advanced art.

MICA (*mico*, to shine); *shining* mineral. It is a simple mineral, and capable of being split into very thin elastic leaves or scales. Lyell says it is often in common life called *talc*; but mineralogists apply the term *talc* to a different mineral.

The *brilliant* scales in granite are *mica*. The common term for mica is Muscovy glass.

MICA SLATE, MICA SCHIST, MICACEOUS SCHISTUS; one of the lowest of the stratified rocks, belonging to the hypogene or primary class, which is characterised by being composed of a large proportion of mica united with quartz.

MICRACANTHUS (*μικρος, mikros*, little; *ακανθα, acantha*, a spine); *small-spined*. A species of the genus of fossil fishes, the *smerdis*.

MICROCEPHALUS (*μικρος, mikros*, little; *κεφαλη, cephalē*, a head); *little-headed*. A species of the fossil genus of fishes, *beryx*.

MICROPHYLLUS (*μικρος, mikros*, little; *φυλλον, phyllon*, a leaf); *small-leaved*; applied to a species of cycadites, or fossil palm.

MICROPLEURUS (*μικρος, mikros*, little; *πλευρα, pleura*, a side); *little-sided*. A species of the fossil genus of fishes, the *myliobates*.

MICROPOMA (*μικρος, mikros*, little; *πωμα, poma*, a lid or gill-cover); *little lid*, or gill-cover. A genus of fossil fishes of Agassiz, so named from the small size of the *operculum*, or cover of the gills.

MILLIOLITE (*mille*, a thousand); a microscopic shell; so called because a *thousand* of them occupy a very small space, and which gives its name to the milliolite limestone of the Paris Basin.

MILLIOLITIC LIMESTONE (*mille*, a thousand; *λιθος, lithos*, stone); a marine formation, disclosing *millions* of minute or microscopic shells.

MINERAL, SIMPLE; a term applied, says Dr. Buck-

land, not only to uncombined mineral substances, which are rare in nature, such as pure native gold or silver, but also to all kinds of compound mineral bodies that present a regular crystalline structure, accompanied by definite proportions of their chemical ingredients. The difference between a *simple mineral* and a *simple substance* may be illustrated by the case of calcareous spar, or crystallised carbonate of lime. The ultimate elements, viz., calcium, oxygen, and carbon, are *simple substances*; the crystalline compound resulting from the union of these elements, in certain definite proportions, forms a *simple mineral*, called carbonate of lime. The total number of *simple minerals* is nearly six hundred; that of *simple substances*, fifty-four.

MIOCENE (*μειων*, *meion*, less; *καινος*, *kainos*, recent); *less recent*. A term applied by Mr. Lyell to one of the four periods of the tertiary strata, each characterised by containing a very different proportion of fossil shells of *recent* species. The *miocene* period is the *less recent*; a small minority of its fossil shells being referable to living species.

MOLAR (*mola*, a mill); belonging to the grinders' (teeth).

MOLASSE (Fr. *molle*, soft); a provincial Swiss name for a soft green sandstone, associated with marl and conglomerates, belonging to the miocene tertiary period, extensively developed in the lower country of Switzerland, and composed of Alpine detritus.

MOLECULE (dim. of *moles*, a mass); a very small substance, not so small as an atom.

MOLLUSCOUS (*mollis*, soft); *soft-bodied* animals, as the name implies. They are divided into *mollusca*, properly so called, which are covered with a shell, as snails, periwinkles, &c.; *conchifera* (*concha*, a shell; *fero*, to bear), or shell-bearing animals, having a shell with two valves, as the oyster, scallop, &c. The *mollusca* are of a higher organisation than the others, having eyes and a distinct nervous system: the *conchifera* have neither eyes nor head, and are therefore called *acephala* (*a*, *a*, not; *κεφαλη*, *kephale*, head), or animals without a head.

MOLLUSCS. Hunting molluscs; those jelly fish which seize their prey.

MOLYBDÆNUM (*μολυβδαινα*, *molybdaina*, lead); an elementary principle with an acidifiable base.

MONAD; the smallest of visible animalcules, spoken of, says Mr. Lyell, by Buffon and his followers as constituting the elementary molecules of organic beings.

MONILIFORMIS (*monile*, necklace; *forma*, shape); in the shape of a necklace. A species of encrinite.

MONILIFER (*monile*, a necklace; *fero*, to bear); *necklace-bearer*. A species of the fossil fish, the nemacanthus.

MONITOR (Lat.); *warners*. A genus of lizards frequenting marshes and banks in hot climates, which have received this name from the prevailing but absurd notion that they give *warning*, by a whistling noise, of the approach of

crocodiles and caymans. See Professor Buckland's Bridgewater Treatise.

MONITOR ANTIQUUS, OR ANCIENT MONITOR; a fossil extinct saurian of the new red sandstone group, found in the copper-slate of Mansfeld, &c.

MONOCHRONIC (*μονος, monos*, alone; *χρονος, chronos*, time) fossil; one that existed at the same geological period. This term is generally rendered by, and means the same as, *characteristic fossil* (*χαρακτηρ, character*, a mark). The gryphite is a *monochronic fossil*, or was existing at the *same time* as the lias. It is so characteristic of the lias, that the French and Germans have named the lias calcaire à gryphite and gryphiten kalk.

MONOCOTYLEDONOUS (*μονος, monos*, single; *κοτυληδων, kotyledon*, a seed-leaf) plants; having one cotyledon, or seed-leaf. This is according to Jussieu's system.

MONODON MONOCEROS (*μονος, monos*, single; *οδων, odon*, a tooth; *κερας, keras*, a horn); the scientific name of the narwal, or sea-unicorn, from its having *one horn*.

MONOGRAPH (*μονος, monos*, single; *γραφω, grapho*, to write); a writing or drawing exhibiting the whole subject at a *single* view. Ex. gr. Mr. Miller, in a *monograph*, exhibits the details of every variation in the structure of each component part in the several genera of the family of crinoidea.

MONTE BOLCA, near Verona, in Italy; a celebrated deposit of fossil fishes, in a limestone of the ter-

- tiary formation. Thousands of specimens have been taken from one quarry.
- MOOR COAL**; a term used by some authors for a kind of friable lignite.
- MORAINE**; the Swiss term for the débris of rocks brought into a valley by a glacier.
- MOSASAURUS** (*Mosa*, the river Meuse; *σαυρος*, *sauros*, lizard); the lizard of the Meuse, or the great animal of Maëstricht, from its being found in the most recent cretaceous formation near that city, on the banks of the Meuse. It is most nearly allied to the monitor, which see.
- MOSCHUS**; a quadruped resembling the chamois, or mountain goat, from which the perfume musk is obtained.
- MOUNT TOM**, in Connecticut; new red sandstone, famous for the ornithicrites, or foot-marks of birds.
- MOUNTAIN LIMESTONE**; a series of limestone strata immediately above the coal measures, and with which they also sometimes alternate.
- MOYA** (South American term); mud poured out from volcanos during eruptions.
- MULATTO**; a provincial term for the green sand of Northern Ireland.
- MULTILOCULAR** (*multus*, many; *loculus*, a little partition); containing many purses, or partitions. A term, when applied to a shell, the same as *many-chambered*. The nautilus, ammonite, &c., are examples.
- MULTIVALVE** (*multus*, many; *valva*, a folding door); a shelly covering composed of many pieces is termed *multivalve*.

MURIATE OF SODA (muriatic acid and soda); the scientific name for common culinary salt, because it is composed of muriatic acid and the alkali soda.

MUSACEÆ; a family of tropical monocotyledonous plants of the banana kind.

MUSCHELKALK (German, *muschel*, shell; *kalkstein*, limestone); *shell limestone*. A limestone of the red sandstone group found in Germany, and not in England, the German name of which is adopted by the English geologists. Equivalent to the *calcaire conchylien* of the French.

MUTATION (*mutatio*, a change); a change.

MYLIOBATES (*μυλιας*, *mylias*, a millstone; *βατω*, *bateo*, to mount); *millstone-mounter*, or *grinder*. A genus of fossil fishes of the placoïd order of Agassiz, from the London clay and crag, &c., in which formation are so frequently found the palates of this genus of fossil rays, of which there are seven species.

MYRIACANTHUS (*μυριοι*, *myrioi*, ten thousand; *ακανθα*, *acantha*, a spine); *myriad-spined*. A genus of fossil fishes, whose ichthyodorulites are found in the lias.

MYRIPRISTIS (*μυριος*, *myrios*, infinite, many; *πρια*, *pria*, a saw); *many saws*. A genus of fossil fishes of Agassiz.

MYRMECOPHAGA (*μυρμηξ*, *myrmeks*, an ant; *φαγω*, *phago*, to eat); *ant-eaters*.

macrocaulis, e; long stalked or stemmed.

macrophthalmus; long-eyed.

macrophylla; long-leaved.

- macropterus, a, um ; long finned or winged.
 mactroïdes ; mactra (shell) like.
 maculatus, a, um ; spotted.
 mæandrus ; meandering, serpentine.
 Malleus ; a mallet.
 mammillatus, a, um ; nipple-shaped.
 mandibulatus ; jaw bone shaped.
 margaritaceus, a, um ; pearly.
 margaritulus ; little pearl.
 marginatus, a, um ; bordered.
 Marginella ; little margin.
 maximus, a, um ; greatest.
 Melania ; black.
 melanoïdes ; dark.
 meniscoïdeus, a, um ; meniscoïd, concavo-convex.
 mespiliformis, e ; medlar-shaped.
 micastron ; little star.
 minor, us ; less.
 mitræformis, e ; mitre-shaped.
 Modiola ; } little bushel.
 modiolus ; }
 modiolaris, e ; bushel-shaped.
 molendinaceus, a, um ; mill sail shaped.
 moniliferus, a, um ; } necklace-shaped.
 monileformis, e ; }
 moniletectus, a, um ; necklace-covered.
 monticulatus, a, um ; monticulate, having many little
 projections.
 mucronatus, a, um ; dagger-like.
 multicarinatus, a, um ; having many projections.
 multiceps ; many-headed.
 multigranulatus, a, um ; many-grained.
 multinodus ; many-knotted.

multiradiatus, a, um ; many-rayed.

multisulcatus, a, um ; many-furrowed.

muricatus, a, um ; murex-like.

muscariformis, e ; brush-shaped.

mutabilis, e ; changeable.

muticus, a, um ; without a beard.

Mya ; gaper.

mytiloïdes ; muscle-like.

N.

NACRE (French) ; mother of pearl.

NAPHTHA (Chaldaic word signifying *to drop*, — Ambrosius says to *unite* or *glue together*) ; a fluid oil or mineral substance, very thin, volatile, and inflammable, of which there are springs in many countries, particularly in volcanic districts. At Rangoon are 500 wells, which yield annually about 412,000 hogsheads, worth 170,000*l.* The inhabitants of Badku, west of the Caspian, have no light or fuel but from naphthâ. It is sometimes called pure rock oil. The naphtha used as a solvent for caoutchouc, or Indian rubber, is procured from gas works.

NAGELFLUH (German, *nail-heads*) ; the German term for a conglomerate of the tertiary series, from the inclosed pebbles appearing like *nail-heads* on a baronial door. The same in England was named *pudding-stone*,— the inclosed pebbles being considered to resemble *figs*. Brongniart has named it gompholite (*γομφος*, *gomphos*, a nail), *nail-stone*.

NECROSIS (*νεκρωσις*, *nekrosis*, a dying) ; a term

applied to the *dying* of the tooth of the crocodile, and of the horn of the deer.

NEMACANTHUS (*νεμω, nemo*, to distribute; *ακανθα, acantha*, a spine); a genus of fossil fishes, whose ichthyodorulites, which are *covered with spines*, are found in the lias.

NEMOPTERUS (*νεμω, nemo*, to distribute; *πτερον, pteron*, a fin); *many-fin*. A species of the fossil genus of fishes, amblypterus.

NENUPHAR; a yellow water lily.

NEPTUNISTS (*Neptune*, the god of the sea); one of the two geological factions that divided the world at the close of the last century; they were followers of Werner in the belief that basalts, and all other such rocks, were chemical precipitates from water, in opposition to the Vulcanists, who, following Raspe, Hutton, and others, concluded they were produced by fire. See Mr. Lyell's interesting account of the progress of the several opinions.

NEURAPOPHYSES (*νευρον, neuron*, a nerve; *αποφυσις, apophysis*, a process); *nerve processes*. Superior laminæ continued through a great part of the tail of the plesiosaurus, protecting the great *nervous trunk*. This term is proposed by Professor Owen, as contradistinguished from hæmaphyses.

NEUROPTERIS (*νευρον, neuron*, a nerve; *πτερον, pteron*, a wing); *nerve-leaved*. A genus of fossil plants, so named by Brongniart.

NEUROPTEROUS (*νευρον, neuron*, a nerve; *πτερον, pteron*, a wing); *nerve-winged*. Applied to some insects whose wings are covered with *nerves*.

NEW RED SANDSTONE ; called likewise, from the colours being sometimes in spots and stripes, *variegated* sandstone, equivalent to the *grès bigarré* of the French, and *bunter sandstein* of the Germans. A series of sandy and argillaceous strata, generally brick red, but containing portions of a greenish grey. It lies above the magnesian limestone.

NICKEL (German miners' epithet of detraction, because it looked like an ore of copper, Dr. Turner states, and yet they could extract none from it); a metal, the constituent of meteoric iron.

NITROGEN (*νιτρον*, *nitron*, nitre; *γεννω*, *gennao*, to produce); an elementary principle, so named, from being an element of *nitric* acid. Lavoisier named it *azote* (*a, a*, not; *ζωη*, *zoe*, life); from its inability to support respiration. Nitrogen and azote are two names for the same thing.

NOCTIVAGOUS (*nox*, night; *vago*, to wander); that fly about by night. Pterodactyles are conjectured to have been *noctivagous*.

NODULE (*nodulus*, a little knot); a rounded irregular shaped lump or mass.

NOMENCLATURE (*nomen*, a name; *calo*, an ancient word, to call); the names or words of a language or science. This work aims at facilitating the acquirement of the geological nomenclature of the day. In a memoir of Miss Mary Anning, of Lyme Regis, in the history of that borough, is an account of the geological nomenclature at the beginning of this century: everything was comprised in the general term "curiosities."

The venders of these at Lyme offered the "bones of crocodiles' backs and jaws, ladies' fingers, cornemioniuses, John Dories, and salmon petrified." Some larger bones were considered to be those of a petrified donkey.

NORMAL (*norma*, a rule); belonging to the type or primitive pattern. *Normal* groups are those taken as a standard.

NOTAGOGUS (*νωτος*, *notos*, the back; *αγωγος*, *agogos*, a leader); *one that carries on his back*. A genus of fossil fishes of Agassiz.

NOTIDANUS (*νωτος*, *notos*, the back; *δανος*, *danos*, dry or shrivelled); a genus of fossil fishes of the placoïd order. There is a species called microdon (*μικρος*, *mikros*, little; *οδων*, *odon*, a tooth), or *small-tooth*.

NUDIBRANCHIA (*nudus*, naked, uncovered; *βραγχια*, *branchia*, gills and organs for breathing in water); a class of crustacea, in which the legs are transformed into soft paddles, having *branchiæ*, or organs for breathing, which, from being uncovered and visible, give the name nudi or gymno (*γυμνος*, naked) branchia, or, *naked branchiæ*.

NUMMULITES (*nummus*, money; *λιθος*, *lithos*, a stone); *money-stone*. A fossil internal shell, resembling a small *coin*, of an extinct genus of molluscous animals called cephalopoda, of a thin lenticular shape, internally divided into small chambers. The stone with which the pyramids and Sphinx are built is full of nummulites.

nanus, a, um ; dwarfish.
 napiformis, e ; turnip-shaped.
 nasutus, a, um ; having a large nose.
 nautiloidea ; nautilus-like.
 Nautilus ; a little sailor.
 navicularis, e ; ship-like.
 navis ; a ship.
 nemoralis, e ; woody.
 nervosus, a, um ; full of nerves.
 nexilis, e ; entwined.
 nitens ; bright, shining.
 nitidulus, a, um ; rather neat.
 nitidus, a, um ; pretty, neat.
 niveus, a, um ; snowy, white as snow.
 nodosus, a, um ; knotty.
 nodulosus, a, um ; in small knots.
 normalis, e ; normal, following the usual structure.
 nucleus ; a kernel.
 Nucula ; a little nut.
 nudus, a, um ; uncovered.
 numismalis, e ; coin-like.
 nummarius, a, um ; money-like.
 nummiformis, e ; coin-shaped.
 nummulus ; a little coin.
 nutans ; nodding.

O.

OBSIDIAN ; a volcanic product or species of lava, very like common green bottle glass, which is almost black in large masses, but semi-transparent in thin fragments. Pumice stone is obsidian in a frothy state ; produced, says Mr.

Lyell, most probably, by water that was contained in or had access to the melted stone, and converted into steam. There are often portions in solid obsidian, which are partially converted into steam.

- OCTOHEDRAL** (*οκτω*, *okto*, eight; *ἕδρα*, *hedra*, a seat); octagonal or eight-sided.
- OCULINA** (*oculus*, the eye); a species of coral, so called from being covered with *eye*-like portions.
- ODONTASPIS** (*οδους*, *odous*, a tooth; *ασπις*, *aspis*, a buckler); *buckler-toothed*. A genus of fossil fishes of the placoid order, found in the chalk. There is, as Agassiz has shown, a species called *raphiodon* (*ραφίς*, *raphis*, a needle), *needle-toothed*.
- ODONTOPTERIS** (*οδων*, *odon*, a tooth; *πτερον*, *pteron*, a wing); *tooth-leaved*. A genus of fossil plants, so named by Brongniart.
- ENINGEN**, quarries of, near Constance, in German Switzerland; in a formation of ancient lacustrine origin, posterior to the molasse.
- OGYGES** (Ogyges, king of Thebes, in whose time happened a great deluge); a name given to a genus of trilobites.
- OGYGIAN DELUGE**; that which is mentioned in fabulous history as having taken place in the reign of Ogyges, king of Thebes, in Attica, whose death is fixed in Blair's Chronological Tables in the year 1764 before Christ.
- OLD RED SANDSTONE**; a stratified formation immediately below the carboniferous group, and next to the silurian system.
- OLIVINE** (*oliva*, an olive); an olive-coloured, semi-

transparent, simple mineral, very often occurring in the form of grains and of crystals in basalt and lava.

OMNIVOROUS (*omnis*, all; *voro*, to devour); eating all kinds of food. The pycnodonts, or *thick-toothed* fossil fishes, were *omnivorous*.

ONCHUS (*ονχος*, *onchus*, a protuberance); a genus of fossil fishes, of which the ichthyodorulites are found in the grauwacke formation. There are 3 species, the *O. arcuatus*, or arched; the *semi-striatus*, or half-striated; and the *Murchisoni*, in honour of Mr. Murchison, of the old red sandstone formation.

ONYCHIUS (*ονυξ*, *onyx*, a claw); *having claws*. A species of the genus of fossil fishes, the pholidophorus.

ONYX (*ονυξ*, *onyx*, a human nail); a variety of agate, in which the siliceous particles are arranged in alternating layers of opaque white, and translucent blue, grey, or brown, resembling the marks on the *human nail*. Cameos are cut out of onyx.

OOLITE (*ωον*, *oon*, an egg; *λιθος*, *lithos*, a stone); *egg* or *roe stone*; so called from the fractured stone exhibiting small rounded particles, like the *roe* of a fish. The term was first affixed by Mr. W. Smith to portions of the present oolitic group. The Rev. Mr. Conybeare has separated this formation as follows, in descending order:—

1. *Upper System*. — Portland oolite; calcareous sand and concretions; Kimmeridge clay, an argillo-calcareous deposit.
2. *Middle System*. — Coral rag and accom-

panying oolites; calcareous sand and grit; Oxford clay, resting on the Kelloway rock.

3. *Lower System*. — Calcareous strata named cornbrash; forest marble; great or Bath oolite; inferior oolite; calcareo-siliceous sands, termed sands of the inferior oolite; lias, an argillo-calcareous deposit.

Mr. Lonsdale places fuller's earth about 140 feet in depth between the great and inferior oolite. French, *calcaire de Jura*, *calcaire Jurassique*. German, *Oolithenbildung*, *Jura kalk*. When the grains of oolite or roe-stone are very large, the rock is termed pisolite, or pea-stone.

OPAL (name used by Pliny); a simple mineral.

OPALESCENCE (*opal*); a kind of reflected milky light which certain minerals exhibit, either if cut *en cabochon*, or upon plain faces, both natural and artificial. The *opalescence* in a cat's eye depends on fibrous composition; in adularia and corundum, on crystalline structure.

OPALISED WOOD; wood petrified by siliceous earth, and acquiring a structure similar to opal.

OPERCULUM (Lat.); a lid or mouth of a shell.

OPHIDIA (*οφίς*, *ophis*, a snake); *snake-like* reptiles. Cuvier's third order of reptiles.

OPHIDIOUS (*οφίς*, *ophis*, a snake); *snake-like*. O. reptiles; snakes and serpents.

ORACANTHUS (*ωραιος*, *oraios*, beautiful; *ακανθα*, *acantha*, a spine); a genus of fossil fishes of Agassiz.

ORBICULAR (*orbis*, a circle) granite; of Corsica, in which balls or spheroids of concentric and alter-

- nate coats of hornblende and compact felspar are disseminated.
- ORBIS** (Lat.); *a circle*. A species of the fossil fish *dapedium*.
- ORGANIC REMAINS** (*organon*, *organon*, an instrument); the remains of animals and plants (*organised bodies*) found in a fossil state.
- ORNITHICNITES** (*ορνις*, *ornis*, a bird; *ιχνος*, *ichnos*, a footprint); *bird footmarks*. The impressions of birds' feet in sandstone.
- ORNITHOCOPROS** (*ορνις*, *θος*, *ornis*, a bird; *κοπρος*, *kopros*, dung); the excrement of birds. A term applied to the *Guano* of Peru, which is 50 or 60 feet thick, and covered occasionally with drifted sand, and is dug for manure.
- ORNITHORYNCHUS** (*ορνις*, *ornis*, a bird; *ριν*, *rhin*, a snout); *bird-snout*. A singular animal of Australia, often referred to in treating of the plesiosaurus, called *paradoxus*, or extraordinary.
- ORODUS** (*ωραιος*, *oraios*, beautiful; *οδους*, *odous*, a tooth); *beautiful-tooth*. A genus of fossil fishes of Agassiz.
- OROLOGY** (*ορος*, *oros*, a mountain; *λογος*, *logos*, a discourse); the science which makes us acquainted with mountains.
- ORTHO CERATITE** (*ορθος*, *orthos*, straight; *κερας*, *keras*, horn); *straight-horn*. A long chambered, conical, straight shell belonging to an extinct genus of the order of molluscous animals, called cephalopoda. An orthoceratite is a straight nautilus. Some are as large as a man's thigh.
- ORYCTOGNOSY** (*ορυσσω*, *orusso*, to dig; *γνωσις*, *gnosis*, knowledge) arranges and describes simple

- minerals according to Werner, and would now be expressed by the term *Mineralogy*.
- ORYCTOLOGY** (*ορυσσω, orusso*, to dig; *λογος, logos*, discourse); the science that treats of fossils.
- OSCILLATION** (*oscillatio*, a swinging on a rope); moving like a swing or pendulum.
- OSMEROIDES** (*osmerus*, a smelt, from *οσμη, osme*, a smell; *ειδος, eidos*, form); *smelt-like*. A genus of fossil fishes, one of the cycloïdians. There are the *O. Mantellii*, *Lewesiensis*, and *granulatus*.
- OSMIUM** (*οσμη, osme*, odour); an elementary principle classed as one of the noble metals, so called from the strong *smell* emitted by some of its compounds.
- OSSEOUS** (*os*, a bone); composed of bones. (*O. breccia*.)
- OSSICULUM** (Lat.); a little bone.
- OSSIFEROUS** (*os*, bone; *fero*, I bring); producing bones. (*O. caverns*.)
- OSTEOLEPIS** (*οστειον, osteon*, a bone; *λεπις, lepis*, a scale); *bony-scale*. A fossil fish of Agassiz. There are the *O. macrolepidotus* (*μακρος, macros*, long; *λεπις, lepis*, a scale), *long-scaled*, and the *arenatus*, or sandy.
- OSTEOLOGY** (*οστειον, osteon*, a bone; *λογος, logos*, a discourse); a division of anatomy which treats of the *bones*.
- OUTLIER** (mineral surveyor's term); strata are said to form outliers, when they constitute a portion of a country, detached from a main mass of similar beds, of which they have evidently once formed a continuous part.

- OVIPOSITING** (*ovum*, an egg; *pono*, to place); the laying of eggs carefully in particular places.
- OXFORD CLAY**; a member of the oolitic group resting on the Kelloway rock.
- OXIDE** (*οξυς*, *oxus*, acid); the combination of metal with oxygen. Rust is oxide of iron.
- OXYGEN** (*οξυς*, *oxus*, acid; *γενναω*, *gennao*, to generate); a name given to this elementary principle from its property of forming *acids*. It is one of the constituent parts of the air, and supports life.
- OXYRHINA** (*οξυς*, *oxus*, sharp; *ριν*, *rhin*, nose); *sharp-nose*. A genus of fossil fishes of Agassiz.
- OZOCERITE** (*οζος*, *ozos*, odour; *κηρος*, *ceros*, wax); *smelling wax*. A fossil wax of Moldavia, so named from its bituminous *odour*.

- obconicus, a, um; rather conical.
- obesus, a, um; plump.
- obliquatus, a, um; crooked.
- obovatus, a, um; egg-shaped, with the broad end uppermost.
- obsoletus, a, um; obsolete, scarcely distinguishable at the margin.
- obvolutus, a, um; folded, tied about.
- ochraceus, a, um; ochre-like.
- octoplicatus, a, um; eight-folded.
- oculatus, a, um; full of eyes.
- olivaceus, a, um; olive-shaped.
- olla; pot-shaped.
- opalinus, a, um; opal-like.
- Orbicula; } rounded.
orbiculites; }

- ornatus, a, um ; adorned.
 ornithocephala ; bird-headed.
 osculifer, a, um ; having a little mouth.
 ovatus, a, um ; ovate, egg-like.
 oviformis, e ; egg-shaped.
 ovoïdea ; egg-like.
 ovula ; } a little egg.
 ovulum ; }

P.

- PACHYCORMUS (*παχυς, pachys*, thick ; *κορμος, cormos*, a trunk) ; *thick-body*. A genus of fossil ganoid fishes of Agassiz.
- PACHYPRION (*παχυς, pachys*, thick ; *πριων, prion*, a saw) ; *thick-saw*. A species of the fossil placoid genus of fishes, the *hybodus*.
- PALÆONISCUS (*παλαιος, palaios*, ancient ; *ονισκος, oniscos*, the ancient name of a fish) ; a genus of fossil fishes of Agassiz. A species is named (*γλαφυρος, glaphyros*, hollowed or carved ; *ουρα, oura*, a tail) *carved-tail* ; another the *macrophthalmus*, or long-eyed. The palæoniscus abounds in the *kupferschiefer*, or copper slate.
- PALÆONTOLOGY (*παλαιος, palaios*, ancient ; *οντα, onta*, beings ; *λογος, logos*, a discourse) ; *a discourse about ancient things*. The science which treats of fossil remains, both animal and vegetable.
- PALÆOTHERIUM (*παλαιος, palaios*, old ; *θηριον, therion*, a wild beast) ; *the ancient beast*. An extinct quadruped, allied to the tapir.
- PALATES (*palatum*, a palate), also called Tritores (Lat.) ; grinders.

PALMIPEDES (*palma*, the palm of the hand; *pes*, a foot); *palm-footed* birds, as the duck. Sixth order of Cuvier's animal kingdom.

PALUDINA (*palus*, a marsh); a genus of fresh water mollusca.

PAPIER KOHLE (German); *paper coal*, so called from its dividing into laminæ as thin as a sheet of *paper*; found near Bonn.

PARADOXUS (*παράδοξος*, *paradoxos*, wonderful); a term applied to one of the five genera of trilobites.

PARALLEL ROADS (or, as others say, shelves or lines) of Glen Roy, in Lochaber, in the West of Scotland; supposed to have been made on each side of the glen by the ancient kings of that country, in order the better to ride after wild beasts. Geologists have exploded this vulgar error; and have attributed their formation to the action of water, in which they probably were marine beaches.

PARASITIC, OR PSEUDO-MORPHOUS (*ψευδος*, *pseudos*, false; *μορφη*, *morphe*, shape, figure) minerals; so named when the original substances have by degrees been totally replaced by others. *Parasitic* shells; those which adhere to living creatures.

PARASITIC THEORY, in reference to malacostacea; a term used as to whether the cephalopod inhabiting the argonaut shell is a *parasitic* intruder, or the true fabricator of that shell.

PARASITICAL PLANTS (*παρα*, *para*, for; *σιτος*, *sitos*, food); those which live upon the juices of other vegetables, as the mistletoe.

PASS INTO. One mineral or formation is said to

pass into another, when both are found so blended in the same specimen that it is impossible to decide where the one terminates and the other begins. Flint is often found to *pass into* chalcedony; chalk into green sand.

PAULITE (St. Paul's, Labrador); a mineral, so called because principally found at St. Paul's.

PECOPTERIS (πεκος, *pecos*, a fleece; πτερον, *pteron*, a wing); *fleecy leaved*. A genus of fossil plants so named by Brongniart.

PEDUNCLE (*pes*, a foot); a flower stalk.

PELAGIAN (*pelagus*, the sea); living in or belonging to the *deep* sea.

PELLICLE (*pellicula*, a diminutive of *pellis*, a skin); a thin covering like thin skin. A *pellicle* of mud is a thin covering of mud.

PEN, or FOSSIL PEN (so called from its resemblance to a quill *pen*); the horny internal shells of *sepia*, or cuttle-fish.

PENTACRINITES, or PENTACRINUS (πεντε, *pente*, five; κρνω, *krino*, to perceive); a lily-shaped animal, so named by Miller in his work on the fossil crinoïdea, because the little bones of its stem are *pentangular*, or *five-angled*, who has classed it as the third genus of the first division.

PENTACRINITES, or PENTACRINUS CAPUT MEDUSÆ (*caput*, head; *Medusa* of fable, whose hair was snakes); a species of the genus *pentacrinites*.

PEPERINO (Italian, *pepe*, pepper); *pepper-stone*. Volcanic matter formed into a rock like tuff, by the cementing together volcanic fine sand, cinders or scoriæ, which is compared to *pepper*.

PER (through); Latin preposition much used in composition, in the same sense as *armatus*, armed; *perarmatus*, thoroughly armed.

PERCENTAGE (*per*, by; *centum*, a hundred); number or quantity of parts considered in reference to one hundred.

PERCOLATE (*per*, through; *colo*, to strain); to strain or filter through.

PERMEATE (*permeo*, to go through). Bones are often *permeated* by calcareous spar.

PETIOLE (*petiolus*); a leaf-stalk, or fruit-stalk.

PETRIFICATION (*petra*, a rock; *facio*, to make); the act of being, and also the thing, converted into stone.

PETROLEUM (*petra*, a rock; *oleum*, oil); a liquid mineral pitch, so called because it is seen to ooze like oil out of the rock. Petroleum is a fluid variety of bitumen.

PETROSILICEOUS (*πετρα*, *petra*, a rock; *silex*, flint); *rock-flinty*. A petrosiliceous rock is one partially turned into flint.

PETWORTH MARBLE; a member of the Wealden formation.

PHALANGES (*φαλαγγξ*, *phalanx*, a line of battle); spaces between the finger joints; *plates* or *phalanges* in the paddles of an ichthyosaurus. The rows of plates in a paddle, after the fourth row, which is called the *meta-tarsus*, are called the 1st, 2d, 3d, and 4th phalangeal rows.

PHANEROGAMIC, PHANEROGAMOUS (*φανερος*, *phaneros*, evident; *γαμος*, *gamos*, marriage) plants; whose organs of reproduction are apparent. Linnæus's term.

PHLEGRÆAN FIELDS (φλεγω, *phlego*, to burn); "Campi Phlegræi," or the Burnt Fields. The country round Naples, so named, says Mr. Lyell, by the Greeks, from the traces of igneous action everywhere visible.

PHOLAS, plural *pholades* (φωλεος, *pholeos*, a hole); *hack-fish*. Commonly so called because they are supposed to *hack* their way into stone, where they live, and are hence scientifically named lithodomi, or *stone-building* creatures. Fishermen may be seen on the ledges at Lyme Regis digging them for bait.

PHOLIDOPHORUS (φωλις, *pholis*, a scale; φερω, *phero*, to bear); *scale-bearing*. A remarkable genus of fossil fishes.

PHONOLITE (φωνη, *phone*, a voice; λιθος, *lithos*, a stone); *clink-stone*, or stone emitting a sound.

PHRYGANEÆ (φρυγανον, *phruganon*, dry brush-wood); a genus of four-winged insects, the larvæ of which, called caddis worms, are used by anglers as bait.

PHYSICS (φυσικ, *physis*, nature); the department of science which treats of the properties of natural bodies, laws of motion, &c.; sometimes called natural philosophy, science, and mechanical philosophy. Those who understand physics are called *scientific*.

PHYTOGRAPHY (φυτον, *phyton*, a plant; γραφη, *graphie*, a drawing); the description or naming of *plants*.

PHYTOLOGY (φυτον, *phyton*, a plant; λογος, *logos*, a discourse); the department of science relating to plants, synonymous with botany.

PHYTOPHAGOUS (*φυτον*, *phyton*, a plant; *φαγω*, *phago*, to eat); *plant-eating*.

PHYTOSAURUS (*φυτον*, *phyton*, a plant; *σαυρος*, *sauros*, a lizard); *plant-lizard*. An extinct fossil reptile of the red sandstone group. A species is named *cylindricodon*, or cylindrical toothed.

PINNA (Lat.); a fin. Also a shell, fossil and recent. From the latter, mother of pearl is procured.

PISOLITE (*πισον*, *pson*, a pea; *λιθος*, *lithos*, a stone); *pea-stone*. A term applied to some varieties of oolite, or *roe-stone*, when the grains are as large as *peas*.

PIT COAL; ordinary coal obtained by sinking pits.

PITCHSTONE; a rock of an uniform texture, belonging to the unstratified and volcanic classes, which has an unctuous appearance like indurated pitch.

PLACOÏDIANS (*πλαξ*, *plax*, a broad plate); the first order of fossil fishes, according to the classification of Dr. Agassiz, characterised by having the skin covered irregularly with *plates* of enamel, sometimes very large, at others small.

PLAGIOSTOMA (*πλαγιος*, *plagios*, oblique; *στομα*, *stoma*, a mouth); *oblique-mouth*. A fossil shell, named from the position of its *mouth*.

PLANERKALK (German, *planer*, a flat stone, or flag; *kalk*, chalk); a German name for a member of the cretaceous group, and equivalent, as appears in M. De la Bêche's Manual of Geology, to our upper green sand.

PLASTIC CLAY (*πλασσω*, *plasso*, to form or fashion); so named because it easily receives and preserves the forms given to it, and is used in the potteries.

One of the beds of the eocene tertiary period. This formation is a series of beds, chiefly sands, with which the clay is associated. The French call this *premier terrain d'eau douce*, or *argile plastique*.

PLATINA (a diminutive of *plata*, the Spanish for silver; therefore platina means *little silver*); a metal.

PLATYCEPHALUS (πλατυς, *platys*, broad; κεφαλη, *cephale*, a head); *broad-headed*. A species of the asaphus, a trilobite.

PLATYCRINITES (πλατυς, *platys*, broad or flat; κρινω, *krino*, to perceive); a lily-shaped animal, so named by Miller from the flatness and breadth of the scapulæ, who has placed it in his third division, fifth genus.

PLATYODON (πλατυς, *platys*, broad; οδων, *odon*, a tooth); *flat-tooth*. A species of ichthyosaurus. See the great specimen in the British Museum, purchased of T. Hawkins, Esq., discovered at Lyme Regis by Miss Anning.

PLATYPTERUS (πλατυς, *platys*, broad; πτερον, *pteron*, a wing or fin); *broad-fin*. A species of the genus asterodermus, or *star-skin*, a fossil fish of Agassiz.

PLATYPUS (πλατυς, *platys*, broad; πους, *pous*, a foot); *broad-footed*.

PLATYSOMUS (πλατυς, *platys*, broad; σωμα, *soma*, a body); *broad-body*. A genus of fossil fishes of Agassiz. There are the *P. gibbosus* and *rhombus*.

PLECTOGNATHI (πλεκτος, *plectos*, infolded; γναθος, *gnathos*, a jaw); Cuvier's sixth order of fishes, having *folded jaws*, as the hippocampus.

PLEIODUS (πλειων, *pleion*, more; οδων, *odon*, a tooth); *more-teeth*. A species of the genus of fossil fishes, the *hybodus*.

PLESIOSAURUS (πλησιων, *plesion*, near to; σαυρος, *sauros*, a lizard); *near to*, or *almost a lizard*. A fossil extinct amphibious animal, resembling the saurian, lizard, or crocodile tribe. The first and finest specimens have been found by Miss Mary Anning, at Lyme Regis, in the blue lias of the secondary formation. There are five or six species. To the head of a lizard, the plesiosaurus united the teeth of a crocodile, a neck of enormous length resembling the body of a serpent, a trunk and tail having the proportions of an ordinary quadruped, the ribs of a chameleon, and the paddles of a whale. Dr. Buckland proceeds with other most interesting matter in his *Bridgewater Treatise*.

Mr. Hawkins, in his work, "Memoirs of Ichthyosauri and Plesiosauri," gives the following specific terms for this fossil animal, invented by him, to distinguish four species by the peculiarities of the tarsus, or first part of the posterior paddle.

1. *Triatarsostinus* (τρια, *tria*, three; ταρσος, *tarsos*, the tarsus, or first part of the foot; οστέον, *osteon*, a bone); *three bones in the tarsus*.
2. *Tessarestarsostinus* (τεσσαρες, *tessares*, four); *four bones in the tarsus*.
3. *Pentetarsostinus* (πεντε, *pente*, five); *five bones in the tarsus*.

4. Extarsostinns ($\epsilon\lambda$, *ex*, six); *six bones in the tarsus*. *

The neck of the *P. dolichodeirus* nearly equals that of the body and tail together.

There are the *P. dolichodeirus*, or *long-necked*; *carinatus*, *keel-shaped*; *macrocephalus*, or *long-headed*; *recentior*, *pentagonus*, *trigonus*, and species not determined, included in De la Bêche's Manual of Geology. A new species is named, by R. Owen, Esq., Hunterian Professor, *P. Hawkinsii*. The short rib processes continued through a great part of the tail, co-existing with the inferior laminæ protecting the great *blood vessels*, are called *hæmapophyses*, or *blood processes* by Mr. Owen. Superior laminæ, as above, protecting the great nervous trunk, he calls *neurapophyses*, or *nerve apophyses*.

The bones of the *plesiosaurus*, however they may differ in form from those of the *ichthyosaurus*, are similarly named. See *ICHTHYOSAURUS* for the anatomical terms.

PLEURACANTHUS ($\pi\lambda\epsilon\upsilon\rho\alpha$, *pleura*, the side; $\alpha\kappa\alpha\nu\theta\alpha$, *acantha*, a thorn or spine); *spines at the side*. A genus of fossil fishes, of which the *ichthyodorulite* is found.

PLEUROSAURUS ($\pi\lambda\epsilon\upsilon\rho\alpha$, *pleura*, side; $\sigma\alpha\upsilon\rho\omicron\varsigma$, *sauros*, a lizard); a genus of saurians, one species of which, the *P. Goldfussii*, is set down by De la Bêche as found in the *oolite*.

* These terms have not been used by Professor Buckland, in his *Bridgewater Treatise*.

PLEUROTOMA (*πλευρα, pleura, side; τομα, toma, cut*); *side-cut*. A genus of fossil shells, so called from the mouth being at the side.

PLIOCENE (*πλειων, pleion, more; καινος, kainos, recent*); *more recent*. A term applied by Lyell to one of the four periods of the tertiary strata, each characterised by containing a very different proportion of fossil shells of *recent* species. The *pliocene* period is the latest, or nearest to our own times; and often by far the largest part of the fossil shells are of *recent* species.

PLUMBAGO, commonly called *black lead*, and graphite, with which pencils are filled; a carburet of iron.

PLUMBIFEROUS (*plumbum, lead; fero, to produce*) tract of country; one that produces lead.

PLUMOSE (*pluma, a small or soft feather*); down-like.

PLUTONIC ROCKS (*Pluto, the god of hell*); granite, porphyry, and other igneous rocks, supposed to have consolidated from a melted state at a great depth from the surface. *Volcanic rocks*, though they also have risen, as Lyell says, have cooled from a melted state upon or near to the surface.

PLUTONISTS (*Pluto, the fabled god of hell*); one of the geological factions, the same as **VULCANISTS**, which see.

PODOCARYA (*πους, pous, a foot; καρνα, carya, nuts*); a genus of fossil plants, so named from the position of the *seeds* or nuts upon *foot-stalks* composed of long rigid fibres.

PÆCILITIC, also **POIKILITIC** (*ποικιλος, poikilos,*

- variegated); a term suggested to be applied to the entire group of strata between the coal formation and the lias. *Terrain pœcilien* (Fr.); the same as bunter sandstein.
- POLDERS (German); low lands gained from the sea. The polders of Holland are well known.
- POLICE OF NATURE; the wonderful regulation in the system of animal nature, by the establishment of a controlling power in the carnivorous animals. Dr. Buckland uses this term in his *Bridgewater Treatise*.
- POLIERSCHIEFER (German, polishing slate); the same as *Tripoli*, or polishing powder, which see.
- POLYGONAL (πολυς, *polys*, many; γωνια, *gonia*, an angle); *many-angled*. The bones of the paddle of the ichthyosaurus are polygonal.
- POLYMIGNITE (πολυς, *polys*, many; μίγνυω, *mignuo*, to mix); a mineral, so called in allusion to its many constituents.
- POLYMORPHA (πολυς, *polys*, many; μορφη, *morphe*, appearance, shape); *many-shaped*. Applied to a zoophyte, the calamopora.
- POLYPARIA, CORALS (πολυς, *polys*, many; παριο, to bring forth); a numerous class of invertebrated animals, belonging to the great division called radiata.
- POLYPI (πολυς, *polys*, many; πους, *pous*, a foot); *many-feet*. Cuvier's fourth class of radiated animals, of which *corals* are an example.
- POLYPORITES (πολυς, *polys*, many; πωρος, *poros*, a pore); *many-pore*. A genus of fossil plants.
- POLYTHALAMOUS (πλυς, *polys*, many; θαλαμος,

thalamos, bedchamber) shells; *many-chambered* shells, such as the nautili, ammonites, and belemnites, which have a siphuncle passing through all the internal chambers, and terminating in a large external chamber.

POMACANTHUS (*πωμα*, *poma*, a lid; *ακανθα*, *acantha*, a spine or thorn); *spines on the gill-cover or lid*. A genus of fossil fishes of Agassiz.

PORITES (*πωρος*, *poros*, a pore); a genus of corals, so called from the *pores* it contains.

PORPHYRY (*πορφυρα*, *porphyra*, purple); an unstratified or igneous rock. The term, says Mr. Lyell, is as old as Pliny, and was applied to a red rock with small, angular, white bodies diffused through it, which are crystallised felspar, brought from Egypt. The term is hence applied to every species of unstratified rock in which detached crystals of felspar, or some other mineral, are diffused through a base of other mineral composition.

PORTLAND LIMESTONE, PORTLAND BEDS; a series of limestone strata, belonging to the upper part of the oolite group, found chiefly in the Island of Portland, in Dorsetshire. Some of the finest bridges and houses in London are built of this stone; and Lyme Cobb, and several harbours, of the cap, or top stone, which is full of shells.

POTERIOCRINITES (*ποτεριον*, *poterion*, a cup like a vase; *κρινω*, *krino*, to perceive); a vase-like lily-shaped animal, which Miller has placed in his second division, fourth genus.

POZZUOLANA (*Pozzuoli*, a town in the Bay of

Naples); volcanic ashes, largely used as mortar for building, similar in nature to what is called in this country, "Roman cement." It is shipped in large quantities from Pozzuoli to all parts of the Mediterranean.

PRECIPITATE (*præcipito*, to throw headlong); a chemical term for the sudden or hasty deposit of substances which have been dissolved in a fluid, but which are separated from it by combining chemically, and forming a solid. This process, says Mr. Lyell, is the opposite to that of chemical solution. Chalk is considered to have been a *precipitate*.

PREDACEOUS (*præda*, booty, prey); living on *prey*.

PRIMIGENIUS (*primus*, first; *genius*, contracted from *genitus*, born); *early, original*, applied to a fossil elephant.

PRISTACANTHUS (*πριστης*, *pristes*, of a saw; *ακανθα*, *acantha*, a thorn or spine); *spines like the teeth of a saw*. A genus of fossil fishes, of which the ichthyodorulite is found in the Jura limestone.

PRISTODONTUS (*πριστης*, *pristes*, of a saw; *οδων*, *odon*, a tooth); *saw-tooth*. A species of fossil fishes of the genus *galeus*.

PROCESS (*pro*, forward; *cedo*, to go); a projecting part of a vertebral bone, — the same as *Apophysis*.

PROPTERYGIUS (*προ*, *pro*, before; *πτερυξ*, *pteryx*, a wing or fin); *fore-finned*. A species of thynnus, a fossil fish of Agassiz.

PROTEOSAURUS (*Proteus*, the shape-changing god

of fable; *σαυρος, sauros*, a lizard); an exploded name given to the ichthyosaurus by Sir Everard Home.

PROTOGINE (*πρωτος, protos*, first; *γεννω, gennao*, to produce); primitive granite, of which Mont Blanc is composed. De la Bêche states that this is a term not unfrequently used for the great system of gneiss with steatite, talc, or talcose mica, constituting a large portion of the central range of the Alps.

PROTOTYPE (*πρωτος, protos*, first; *τυπος, typos*, a mould); the original from which others are copied.

PSAMMODUS (*ψαμμος, psammos*, the sand; *οδους, odous*, a tooth); *sand-tooth*. A fossil fish of the placoïd order. A species is named *asper*, or rough.

PSEUDO-MORPHOUS (*πσευδος, pseudos*, false; *μορφη, morphē*, shape, figure); *deceptive appearance*. Such are the nodules of iron pyrites at Lyme, called from their shape *mushrooms*; and a crystallisation resembling a wing, and called *Cupid's wing*.

PTERODACTYLUS (*πτερον, pteron*, a wing; *δακτυλος, dactylos*, a finger); *wing-fingered*. A flying reptile found in the lias and the Jura formation. So named by Cuvier, by whom this was considered to be the most extraordinary of all the extinct animals. There are eight species of this genus, varying from the size of a snipe to that of a cormorant. The joints of the fourth or fifth finger were lengthened to become the expanders of a membranous wing; hence the

name *wing-fingered*. See Professor Buckland's *Bridg. Treat.* There are the *Pterodactylus macronyx*, or long claw; *longirostris*, or long beak; *crassirostris*, or thick beak; *brevirostris*, or short beak; *medius*, middle; *grandis*, large; *Munsteri*, Munster.

PTEROPODA (*πτερον*, *pteron*, a wing; *πους*, *pous*, a foot); *wing-footed*. Cuvier's second class of mollusca, or *soft* animals, as the *Clio australis*.

PTYCHACANTHUS (*πτυχη*, *ptyche*, a fold; *ακανθα*, *acantha*, a spine); *folded spine* or *thorn*. A genus of fossil fishes, of which the ichthyodorulite is found.

PTYCHODUS (*πτυχη*, *ptyche*, a fold; *οδους*, *odous*, a tooth); *folded-tooth*. A genus of fossil fishes of the shark family, found in the chalk; one of Agassiz's placoids. There are the *Ptychodus latissimus*, *polygyrus*, *mammillaris*, *decurrens*, and *altior*.

PTYCHOLEPIS (*πτυχος*, *ptychos*, folded; *λεπιδ*, *lepis*, a scale); *folded-scale*. A fossil fish of Agassiz, from the lias of Boll.

PUBESCENCE (*pubesco*, first growth of the beard); the soft hairy down on insects.

PUDDING STONE; common term for *conglomerate*. So styled because the stones and their matrix resemble *pudding*.

PUMICE STONE (*pumex*, anciently *spumex*, or *froth* stone); a light spongy lava, chiefly felspathic, of a white colour, produced by gases. It may, says Lyell, be called the *froth* of obsidian, or melted volcanic glass.

PURBECK BEDS; limestone strata of the Wealden group in the Isle of Purbeck, on the south-east coast of Dorset.

PUY (French); provincial term for mountains in Auvergne, which are extinct volcanoes; as the Puy de Dome, Puy de Montgy, &c. These volcanoes are frequently styled, in geological works, the *Puys*.

PYGOPTERUS (*πυγων*, *pygon*, a cubit; *πτερον*, *pteron*, a wing or fin); *cubit-finned*. A genus of fossil fishes of Agassiz. A species is called *Humboldti*.

PYRITES (*πυρ*, *pyr*, fire). Iron pyrites, locally named copperas, from its yellow shining crystals, like copper or brass, is a compound of sulphur and iron, and is found in almost every rock, stratified and unstratified. How correctly it was termed *fire-stone* by the Greeks, may be learnt from the History of Lyme Regis, where there is an account of the spontaneous combustion of the cliffs, which abound in pyrites, between Lyme and Charmouth, in 1751. See Philosophical Transactions, vol. lii.

PYRO-CHEMICALLY formed (*πυρ*, *pyr*, fire); through the instrumentality of *fire*, as crystals of prismatic felspar on the walls of a furnace in which copper slate and ore have been melted.

PYROGENOUS (*πυρ*, *pyr*, fire; *γεννωω*, *gennao*, to produce) rocks; *produced by the agency of fire*. The same as igneous rocks, such as granite, &c.

PYROMETER (*πυρ*, *pyr*, fire; *μετρον*, *metron*, a measure); a *fire-measurer*, or instrument for

ascertaining the heat of furnaces, &c., and great degrees of heat.

pachyoptera; thick winged.

paleatus, a, um; chaffy.

pallidus, a, um; pale.

palmatus, a, um; palmate, having five lobes like the human hand.

palpebrosus, a, um; having large eyebrows.

panduratus, a, um; fiddle-shaped.

pandus, a, um; bent downward.

pannus; cloth.

papaveraceus, a, um; poppy-shaped.

papilionatus, a, um; butterfly-shaped.

papillatus, a, um; nipple-like.

papillosus, a, um; } pimpled, covered with nu-
papulosus, a, um; } merous tubercles.

paradoxus, a, um; extraordinary.

parvus, a, um; small.

patella; knee-pan, limpet.

patellaris, e; knee-pan-shaped.

parvulus, a, um; very small.

patelliformis, e; patella or limpet shaped.

patens; spreading.

patulosus, a, um; broad.

patulus, a, um; broad.

paxillosus, a, um; resembling a little stake.

Pecten; comb (the scallop shell).

pectinatus, a, um; pectinated, toothed like a comb.

pectinifer, a, um; comb-bearing.

pectinoides; comb-like.

pectunculus; a little comb.

Pedum; a shepherd's crook.

- pelagicus, a, um ; of the deep sea.
 pellis serpentis ; serpent's skin.
 pellucidus, a, um ; quite transparent.
 peltatus, a, um ; } half moon shaped.
 peltiformis, e ; }
 Penicellus ; a pencil or brush.
 pennæformis, e ; wing-like.
 pennicostis, e ; feather-ribbed.
 perarmatus, a, um ; completely armed.
 peramplus, a, um ; very large.
 peregrinus, a, um ; foreign.
 perovalis, e ; very oval.
 personatus, a, um ; personate, mask-like.
 pertusus, a, um ; pierced.
 pes anseris ; goose foot.
 petricolus, a, um ; living in stone.
 phaseolinus, a, um ; French bean shaped.
 phragmiger, a, um ; partitioned.
 pictus, a, um ; painted.
 pilearis, e ; cap-like.
 pileopsis ; hat-like.
 piliferus, a, um ; hair-pointed.
 Pinna ; a fin, the shell nacre or mother of pearl.
 piriformis, e ; pear-shaped.
 piscatorius, a, um ; fishing.
 pisiformis, e ; pea-shaped.
 pistilliformis, e ; pestle-shaped.
 placentiformis, e ; placenta or cake shaped.
 Plagiostoma ; side mouth thick, round, and concave,
 both on the upper and lower surface.
 planatus, a, um ; smoothed.
 planicostatus, a, um ; smooth ribbed.
 Planorbis ; even whorled, i. e. the spines revolving
 in nearly the same circular plane.

- planulatus ; rather smoothed.
 platrachis ; having a broad rachis.
 platynotus ; broad back.
 Pleurotomaria ; side cut.
 plica ; a plait or fold.
 plicatella ; a little plait or fold.
 plicatilis, e ; } folded.
 plicatus, a, um ; }
 plicomphalus, a, um ; folded in the middle.
 pluma ; a feather.
 plumosus, a, um ; feathery.
 poculiformis, e ; cup-shaped.
 polygonatus, a, um ; many-angled.
 polymorphus, a, um ; many-shaped, of many
 fashions or forms.
 polyommata ; many-eyed.
 polystachya ; many-eared (of corn).
 polytoma ; cut into many parts.
 pomatia ; having a strong lid.
 ponderosus, a, um ; heavy.
 porrectus, a, um ; stretched out.
 præmorsus, a, um ; jagged as if bitten off.
 primigenius, a, um ; } original.
 primordialis, e ; }
 priscus, a, um ; ancient.
 proboscoïdeus, a, um ; proboscis-like.
 proliferus, a, um ; putting forth the rudiment of
 another stalk.
 protensus, a, um ; stretched out.
 proto ; first or original.
 pseudo ; false.
 psilopora ; having fine pores.
 Pterocera ; winged horn.

pteroides; wing-like.
 ptychoïdes; bent.
 pubescens; downy.
 pulcher, a, um; beautiful.
 pulcherrimus, a, um; fairest.
 pulverulentus, a, um; powdery.
 pulvinarium; cushion.
 pulvinatus, a, um; cushioned.
 pumilus, a, um; little.
 Pupa; swathe or bandage.
 pusillus, a, um; very small.
 pyriformis, e; pear-shaped.

Q.

QUADERSANDSTEIN (German, *quader*, square stone; *sandstein*, sandstone); German term for a member of the cretaceous group. See De la Bèche's Geological Manual.

QUADRUMANA (*quadrus*, a derivative of *quatuor*, four; *manus*, hand); animals having two arms and two feet, such as monkeys, — their feet being in some degree used as hands.

QUAQUAVERSAL (*quâquâversum*, on every side) dip; a circular dip or inclination in every direction, as in volcanic cones, and an inverted funnel.

QUARTZ; a German provincial term, universally adopted in scientific language for a simple mineral composed of pure silex, or earth of flints: rock crystal is an example.

quadratus, a, um; square.

quadricostatus, a, um; four-ribbed.

- quadrifidus, a, um; divided or split into four.
 quadrigeminus, a, um; four times doubled.
 quadriplicatus, a, um; four-folded.
 quadrisulcatus, a, um; four-furrowed.
 quadrivittatus, a, um; having four chaplets.
 quinquecostatus, a, um; five-ribbed.

R.

- RADIATA (*radius*, a ray); rayed or radiated creatures, such as the star-fish.
- RADIUS (Lat. the upper bone of the cubit); the bone or plate which, together with the ulna, forms the first row, after the humerus, in the *front* paddles of an ichthyosaurus or plesiosaurus. The radius and ulna of the *front* paddles correspond to the fibula and tibia of the *hind* paddles.
- RAPHIODON (*ραφίς*, *raphis*, a needle; *ὄδους*, *odous*, a tooth); *needle-tooth*. A species of the fossil fish odontaspis, or *buckler-tooth*.
- RAUCHWACKE (*rauch*, smoke; *wacke*, a local German term); a member of the zechstein or limestone series of Germany.
- RED MARL; a term often applied to the new red sandstone, which is the principal member of the red sandstone group: also Exeter red marl.
- REFRACTORY (*refringo*, to break through restraint); difficult to be ruled or managed. A mineral which resists heat and repeated blows is said to be refractory.
- RÈGNE ANIMAL (French, animal kingdom); term

of Cuvier's classification, depending upon organisation, which supersedes Linnæus's *Systema Naturæ*, or Natural System.

RESTORATION; the drawing or modelling of a fossil animal, with the skeleton covered with its flesh, skin, and parts, in the very state it appeared by analogy to have existed when alive.

RETRACTILE (*retraho*, to draw back); capable of being drawn back, as are the cuticular expansions of mollusca.

REVERBERATE (*re*, again; *verbero*, to beat); to beat back, reflect. Rocky tracts reverberate heat into the air.

RHACHEOSAURUS (*ραχια*, *rachia*, rock; *σαυρος*, *saurus*, a lizard); *rock lizard*.

RHODIUM (*ροδον*, *rodon*, a rose); an elementary principle classed as one of the noble metals, so called from the colour of some of its compounds.

RHODOCRINITES (*ροδος*, *rodos*, a rose; *κρινω*, *krino*, to perceive); a lily-shaped animal, so called by Miller from the *rose*-like figure of the alimentary canal, who has classed it in his third division, eighth genus.

RHOMBOIDAL (*rhombos*); in the shape of the rhombus, or four-sided lozenge-shaped figure.

RHYNCOLITES (*ριν*, *rin*, nose; *λιθος*, *lithos*, a stone); *beak stones*. The hard fossil beaks of the sepia.

ROCK; a term applied in geology, not only to the hard substances to which this name is commonly given, but also, says De la Bêche, to those various sands, gravels, shales, marls, or clays, which form

beds, strata, or masses : hence the expression, the
“ rocks of a country.”

ROCK BASINS ; local and antiquarian term for the decomposition of granite, generally about three feet in diameter, and two feet deep, considered to be the work of the Druids.

RODENTIA (*rodo*, to gnaw) ; animals which gnaw their food, as the rat.

ROESTONE ; common term for oolite.

ROTTENSTONE ; a common term for a variety of tripoli, found at Bakewell, near Derby.

ROUGEMENT ; a local term for a slide of the cliffs, or land-slip.

RUDDLE ; a common term meaning *red*, for a red variety of iron ore.

RUGOUS (*rug*, a wrinkle) ; *wrinkled*. A remarkable *rugous* tooth, in shape like a tessera of a pavement, is called, from its resemblance, a *leach*.

RUMINANTIA (*rumino*, to chew over) ; animals which chew the cud, as the ox, deer, &c.

racemosus, a, um ; full of bunches.

racemus ; a bunch or cluster.

radiciformis, e ; root-shaped.

radix ; a root.

ramosus, a, um ; branching.

rarispinga ; having few spines.

rastellum ; a little rake.

recurvirostra ; bent beak or jaw.

recurvus, a, um ; bent back.

remiformis, e ; oar-shaped.

reniformis, e ; kidney-shaped.

- repandus, a, um ; repand, uneven, having a slightly sinuous margin.
- replicatus, a, um ; folded back.
- resupinatus, a, um ; upside down.
- reticulatus, a, um ; reticulate, like network.
- retusus, a, um ; blunt.
- revolutus, a, um ; turned back.
- rhombeus, a, um ; } diamond or lozenge shaped.
 rhomboides ; }
- rigidulus, a, um ; rather stiff.
- rimosus, a, um ; full of chinks.
- rostralinus, a, um ; having a little beak.
- rostratus, a, um ; beaked.
- rotatus, a, um ; wheel-shaped.
- rotifer, a, um ; wheel-bearing.
- rotulus, a, um ; rounded.
- rotundatus, a, um ; rounded.
- rudis, e ; not worked or fashioned.
- rugatus, a, um ; wrinkled.
- runcinatus, a, um ; hook-backed.

S.

- SAARBRUCK, in Lorraine ; a coal formation, celebrated as a deposit of fossil fishes.
- SACCHAROID (*σακχαρ*, *sacchar*, sugar) ; stone of a texture like lump *sugar*, as statuary marble.
- SAHLITE (*Sahla*, a silver mine of Westmania, in Sweden) ; a mineral, so called from the locality.
- SALIENT (*salio*, to leap or bound forward) angle. In a zig-zag line, the projecting angles are called the *salient* angles ; the others the re-entering angles.
- SALT SPRINGS ; which contain a large quantity of

common salt, obtained from them by mere evaporation. These are abundant in Cheshire and Worcestershire, and the geologist will find the names of the places where these springs are, to end in *wich*, as Droitwich, Nantwich, &c. &c. See WICH.

SANDSTONE; any agglutination of grains of sand, whether calcareous, siliceous, or of any other mineral nature.

SAPPHIRE (*σαπφειρος*, *sapphirus*); a blue mineral and precious stone, whose base is alumine.

SARDONYX (*Sardes*, in Lydia *onyx*); a variety of onyx, a kind of agate, supposed to have received its name from having been brought from *Sardes*; others derive the name from *Sardo*, the Greek name of Sardinia. The opaque white alternates with a rich deep orange brown. See the Penny Encyc.

SATURATED (*saturus*, full) solution; when no more of the matter dissolved can be holden by the liquid.

SAURIAN (*σαυρος*, *sauros*, a lizard) remains; those of *lizard*-like animals, as the ichthyosaurus, hylæosaurus, &c.

SAUROCEPHALUS (*σαυρος*, *saurus*, a lizard; *κεφαλη*, *cephale*, a head); *lizard-headed*. A genus of fossil fishes of the cycloid order, found in the chalk. A species is named *lanciformis*, or lance-shaped.

SAURODON (*σαυρος*, *saurus*, a lizard; *οδους*, *odous*, a tooth); *lizard-toothed*. A genus of fossil fishes found in the chalk of the cycloid order.

SAUROÏDS (*σαυρος*, *saurus*, a lizard; *ειδος*, *eidos*,

form); *lizard-like* fishes. Large fishes, so called by Agassiz from their combining in their structure certain characters of *reptiles*, which are found in the chalk and green sand of Sussex and Kent. The large, conical, striated teeth bearing a resemblance to crocodiles, caused these fishes to be confounded with them.

SAUROPSIS (*σαυρος*, *saurus*, a lizard; *οψ*, *ops*, an eye); *lizard-eye*. A genus of fossil fishes of Agassiz. A species is named *longimanus*, or long-handed.

SAWYERS; American term applied to trees in a river, with their roots downwards, and only forced from a vertical position by the current, which keeps moving them up and down. A sawyer is a moving *snag*.

SCAGLIA; formation near Padua, equivalent to chalk.

SCAPHOÏD BONE (*σκαφη*, *scaphe*, a skiff or boat; *ειδος*, *eidōs*, form); *hollow like a skiff*. A bone of the tarsus of the paddle of an ichthyosaurus, so named from its peculiar shape.

SCAPULA (Lat.); a shoulder blade bone.

SCHILLER SPAR; found in serpentine.

SCHIST (*schistus*, that which may be split); a formation approaching the nature of slate, and often used synonymously with slate. Mr. Lyell distinguishes between them, and states that the granitic or primary *schists*, as they are termed, such as gneiss, mica-schist, and others, cannot be split into an indefinite number of parallel laminae, like rocks which have a true slaty cleavage.

SCHIZOPTERIS (*σχίζω*, *schizo*, to divide ; *πτερον*, *pteron*, a wing) ; *split wing*. A genus of fossil plants.

SCHIZURUS (*σχίζω*, *schizo*, to divide ; *ουρα*, *oura*, the tail) ; *rent-tail*. Applied to a species of the fossil fish *labrax*.

SCHORL ; a black opaque variety of tourmaline.

SCITAMINEOUS (*scitamentum*, pleasantly tasted meat) plants ; aromatic plants.

SCLEROTIC PLATES (*σκληρος*, *scleros*, hard) ; the bony thin plates in the eye of the ichthyosaurus, which approached the form of the bony circle in the eye of the golden eagle, and enabled the animal to sustain in that organ the pressure of deep water.

SCOPIFORM (*scopa*, a bundle or tuft) ; *tuft-shaped*, as when a number of small crystals are aggregated in tufts or bundles.

SCORIACEOUS (*scoriæ*, cinders) ; arranged like scoriæ, volcanic cinders or ashes.

SCORIÆ (Lat.) ; volcanic cinders or ashes.

SEAM ; a term employed to designate a thin stratum.

SECONDARY STRATA ; an extensive series of the stratified rocks, with certain characters in common, which distinguished them from another series below them, called by the geologists *primary*, and from a third series above them, called *tertiary*. Mr. Lyell says these divisions are not yet obsolete, but have gradually become less fitted to represent the present state of our knowledge. The secondary rocks are the cretaceous, the wealden, the oolite (upper, middle, and lower),

the lias, the new red sandstone and muschelkalk, and the magnesian limestone.

SECULAR REFRIGERATION (*sæculum*, an age; *refrigeratio*, a cooling); the periodical cooling and consolidation of the globe, from a supposed state of fluidity from heat.

SECURIS (Lat.); an *axe*. A species of fossil fishes of the genus *pristacanthus*.

SEDIMENTARY ROCKS (*sedeo*, to settle down); those formed by their materials having been thrown down from a state of suspension, or solution in water. Lias is considered to be a *sedimentary deposit*.

SEICHES (Swiss term); an occasional undulation of the water of lakes, like a tide wave, sometimes to the height of five feet, supposed to be caused by the unequal pressure of the atmosphere.

SELACHII (*σελας*, *selas*, splendour); Cuvier's eighth order of cartilaginous fishes, as the ray.

SELENITE (*σεληνη*, *selene*, the moon); crystallised gypsum, or sulphate of lime, commonly called *moon stone*.

SELENIUM (*σεληνη*, *selene*, the moon); a substance which, having been confounded with the metal tellurium (from *tellus*, the earth), was named after the *moon*, to present a recurrence of the mistake.

SEMIONOTUS (*σημιον*, *semion*, a mark; *νωτος*, *notos*, a back); *marked in the back*. A genus of fossil fishes of Agassiz. A species is named *rhombifer*, or *rhombus-bearing*.

SEMIOPHORUS (*σημιον*, *semion*, a mark; *φερω*, *phero*,

- to bear); *mark* or *stamp bearer*. A genus of fossil fishes of Agassiz.
- SEPIA; the ancient name for the cuttle fish, and one still in use.
- SEPTARIA (*septum*, an inclosure or partition); formerly called *ludus Helmontii*, or "tortoise stone;" masses in the shape of a tortoise, intersected by *septa*, or partitions of calcareous matter.
- SERPENTINE (*serpens*, a serpent); a rock so named from the colours or mottled spots it occasionally displays, like the skin of some *serpents*. This rock usually contains much magnesian earth, for the most part unstratified, but sometimes appearing to be an altered or metamorphic stratified rock.
- SERRATED (*serra*, a saw); jagged like a saw.
- SERRULATUS (*serra*, a saw); *saw-like*. A species of fossil fishes of the genus *sphenacanthus*.
- SERTULARIA (*sertum*, a garland); a genus of arborescent corals.
- SHALE (German, *schalen*, to peel, to split); a provincial term, adopted by geologists, to express an indurated slaty clay. There is the coal *shale*.
- SHELL MARL; a deposit of clay, peat, and other substances mixed with *shells*, which collects at the bottom of lakes.
- SHINGLES; rolled or water-worn pebbles.
- SIGILLARIA (*sigillum*, a seal); *seal plant*. A genus of extinct fossil plants which has the appearance of having been impressed with a *seal*.

SILEX (Lat. flint); a large ingredient in the composition of the crust of the earth, consisting of silica and oxygen. Mr. Lyell states that French geologists have applied *silex* as a generic term for all minerals composed entirely of that earth, of which there are many of different external forms.

SILICA (*silex*, flint); one of the pure earths, found in *silex*, or flint.

SILICATE (*silex*, flint); a chemical compound of silica and another substance, as silicate of iron. The green sand formation contains green silicate of iron.

SILICEOUS (*silex*, flint); of or belonging to the earth of flint.

SILICIFIED (*silex*, flint; *fit*, to become); turned into *silex*, or flint.

SILT; fine sand, clay, and earth, transported by running water, and often accumulated in banks so as to *silt* or stop up the mouth of a river.

SILURIAN (*Silures*, the ancient inhabitants of part of Wales). The *Silurian system* is a name assigned by Mr. Murchison to a series of deposits, in which the strata of the transition series are continued downwards between the coal formation and the older members of the *grauwacke* formation, in much of the territory of the ancient *Silures*. The *silurian system* is divided into the Ludlow rocks, Wenlock or Dudley limestone, Wenlock shale, Caradoc sandstone, Llandeilo flags and limestone. Total thickness nearly 8000 feet.

SIMPLE MINERAL ; as distinguished from *rocks*, which are usually an aggregation of *simple* minerals. Mr. Lyell says they are not simple in regard to their nature; for when subjected to chemical analysis, they are found to consist of a variety of substances. Pyrites is a simple mineral in the sense we use the term, but it is a chemical compound of sulphur and iron.

SIPHUNCLE (*siphunculus*, a gimblet); a hole or tube as if bored with a *gimblet*, that runs through the internal compartments of an ammonite.

SIPHUNCULUS CENTRALIS ; central siphunculus. **Siphunculus lateralis** ; lateral or side siphunculus.

SIVALIC, SEWALIK MOUNTAINS ; at the southern foot of the Himalayas, between the Sutlej and the Ganges, sandstone containing bones of the sivatherium, horse, &c.

SIVATHERIUM (*Sivalic*—from Siva, an Indian deity—or sub-Himalayan range of mountains between the Jumna and Ganges; *therion*, beast); *Sivalic beast*, an unknown fossil ruminating animal nearly as large as an elephant, lately discovered in the *Sivalic* range.

SMERDIS (the brother of Cambyses); a name given to a genus of fossil fishes by Agassiz. A species is named *micracanthus*, or *small spined*.

SNAGS ; American term for trees in a river with their roots downwards, and only forced from their vertical position by the current. A *sawyer* is a moving *snag*.

SOLENHOFEN, near Aichstadt ; lithographic slate, a calcareous limestone, of the Jura formation, containing pterodactyles, &c., considered to constitute the highest part of the oolitic series of Germany.

SOLFATARA (Italian); a semi-extinct volcano, emitting only gaseous *sulphurous* exhalations, and aqueous vapours, so called from the Solfatara, near Naples.

SPAGNUM PALUSTRE (*palustris*, marshy); the plant that forms peat bogs.

SPATANGUS; a genus of the echinus, or sea-urchin.

SPATHOSE (*spathe*, covering of the date); resembling the covering of the date.

SPECIFIC GRAVITY (*species*, species; *gravitas*, weight) is the particular weight of any species of matter, gold, wood, amber, &c., as compared with the gravity or weight of a portion of exactly the same size of any other matter, as brick, bitumen, agate, &c. Thus, if a cubic foot of distilled water weigh (that is, if its specific gravity is) 1000 ounces avoirdupoise, a cubic foot of copper is 8878, and of gold 19,258 ounces.

M. De la Bêche has made some curious observations on the specific gravity of shells, which, in the case of the land shells, turned out to be greater than that of Carrara marble.

SPECULAR IRON ORE (*speculum*, a looking-glass); a variety of iron ore in which are polished surfaces that reflect objects like a *looking-glass*.

SPEETON CLAY; a member of the cretaceous group, uniting the characters of gault and Kimmeridge

clay, named from the locality on the Yorkshire coast.

SPELÆAN (*σπηλαιος*, *spelæus*, of a cavern); that frequent caverns. A term applied to the hyæna.

SPHÆRODUS (*σφαιρα*, *sphæra*, a sphere; *οδους*, *odous*, a tooth); *spherical-toothed*. A genus of fossil fishes of the Ganoïd order, found in the chalk. A species is named *mammillaris*, *breast-like*.

SPHENACANTHUS (*σφην*, *sphen*, a wasp; *ακανθα*, *acantha*, a thorn, or spine); *wasp-shaped spines*. A genus of fossil fishes, of which the ichthyodorulite is found.

SPHENOPTERIS (*σφην*, *sphen*, a wasp; *πτερον*, *pteron*, a wing); *wasp-like leaf*. A genus of fossil plants so named by Brongniart.

SPICULAR (*spiculum*, a dart); *dart-like*, arranged in thorn-like fibres.

SPINAX (*spina*, a thorn); a genus of fossil fishes, of which the ichthyodorulite is found resembling a large *thorn* or *spine*.

SPIRIFERA (*spira*, a spire; *fero*, to bear); *spire-bearing*. An extinct genus of bivalve shells.

SPIROLINITE (*σπειρα*, *spira*, a coiling of a snake or cable); a remarkable genus of minute shells, discovered by the Marquis of Northampton, in the pebbles at Brighton, so called from their *spiral* or *winding* chambers.

SPORULES (*σπορα*, *spora*, a seed); little seeds of mosses, and other cryptogamic plants.

SQUALOID (*squalus*, a genus of sharks, named by Linnæus; *ειδος*, *eidōs*, form); *shark-like*, or resembling the genus *squalus*. A family of fossil sharks, styled true sharks.

- SQUAMOSE** (*squama*, a scale); scale-like.
- STALACTITE** (*σταλαζω*, *stalazo*, to drop); the carbonate of lime hanging from the roof of a cavern, like icicles. The *stalactite* hangs from the roof; the *stalagmite* is a mass on the floor.
- STALAGMITE** (*σταλαγμα*, *stalagma*, a drop); the crust of limestone on the *floor* of a cavern, formed by *droppings* from the roof. The *stalactite* hangs from the *roof*; the *stalagmite* is a mass on the *floor*.
- STANNIFEROUS SLATE** (*stannum*, tin; *fero*, to bear); producing tin.
- STATICAL FIGURE** (*στατος*, *statos*, stable); the figure which results from the equilibrium of forces.
- STEATITE** (*στεαρ*, *atos*, *stear*, *atos*, fat); commonly called "soap-stone," which forms veins in serpentine. French chalk is a steatite, or soap-stone.
- STELLERIDANS** (*stella*, a star); star fish, so called from their resemblance to the ancient drawings of *stars*.
- STELLULAR** (*stella*, a star); star-like.
- STENEOSAURUS** (*στενος*, *stenos*, narrow; *σαυρος*, *sauros*, a lizard); *narrow lizard*; a new genus of fossil saurians, or lizards, established by M. Geoffroy St. Hilaire, with long and narrow beak, like the existing Gavial, a species of crocodile. See Dr. Buckland's *Bridgewater Treatise*.
- STERNO-COSTAL** (*sternum*, breast bone; *costa*, a rib); ribs attached to the sternum.
- STERNUM** (Latin); breast bone.
- STIGMARIA** (*στιγμα*, *stigma*, a mark burnt in, or stamped); an extraordinary family of extinct

- fossil plants, so called from their being *studded over* with spirally disposed *tubercles*.
- STILBITE**; a crystallised simple mineral, usually white; one of the zeolite family, frequently included in the mass of trap rocks.
- STOMAPODA** (*στομα*, *stoma*, a mouth; *πους*, *pous*, a foot); *mouth-footed*. Cuvier's second order of crustacea, as the *phyllosoma*.
- STONESFIELD**, near Oxford; slate containing pterodactyles, &c., a lower portion of the great oolite.
- STRATUM** (*sterno*, to lay flat); a bed or layer of rock, or geological formation.
- STREET**, near Glastonbury, in Somersetshire; blue lias quarries, abounding with ichthyosauri, &c.
- STRIKE** (German *streich*, stroke); term recently adopted to signify the *line of bearing* of strata which is always at right angles to their prevailing dip.
- STROBILUS** (*στροβιλος*, *strobilos*, from *στρεφω*, *strepheo*, to turn); a fir cone.
- STRONTIUM** (Strontian, in Scotland, where it was first found); an elementary principle, with an alkalifiable base.
- SUB** (Lat. preposition, *under*. In composition, *sub* diminishes the force of the adjective or verb, for example, *pinguis*, fat; *subpinguis*, rather fat; *rubeo*, I am red; *subrubeo*, I am somewhat red.
- SUB-APENNINES** (*sub*, under); the under or lower Apennine mountains in Italy. The term is applied geologically to a series of strata of the Older Pliocene period.
- SUB-LAMELLAR** (*sub*, under; *lamella*, a very thin

plate of metal, &c.); extremely thin, like a sheet of paper, &c.

SUBSTANCE. — For the difference between a *simple substance* and a *simple mineral*, see *Mineral*.

SUB-STRATUM (*sub*, under); under layer.

SUBTERES (Lat.); *roundish*. A species of the fossil genus of fishes, the *Psammodus*.

SUCCINIC ACID (*succinum*, amber); procured by distillation from amber.

SUPERNATANT (*super*, upon; *nato*, to float); swimming upon, as being lighter than water.

SURTURBRAND (Icelandic name); a brown coal, or lignite of that island, less compact than jet.

SYENITE (Syene, in Upper Egypt, where it abounds); a species of granite. It is syenite when hornblende is added to quartz, feldspar, and mica; also when the mica is supplanted by hornblende.

SYMPHYSIS (*συν*, *syn*, together; *φύω*, *phuo*, to grow, to unite); a growing together or uniting. There is a cartilaginous Symphysis.

SYNARTHRODIAL, **SYNARTHROSIS** (*συν*, *syn*, together; *αρθρωσις*, *arthrosis*, an uniting of bones); a close uniting or articulation of bones with obscure movement, as in the wrist bones of the human frame.

SYNCHONDROSIS (*συν*, *syn*, together; *χονδρος*, *chondros*, a cartilage); a term used by anatomists to signify the *connection* of two joints by means of a *cartilage*, as in the bones of the paddle of the plesiosaurus.

SYNCHRONOUS (*συν*, *syn*, together; *χρονος*, *chronos*,

time); happening or living at the same period. Synchronous fossils are those of creatures that existed at the *same period*. Ammonites and ichthyosauri were synchronous.

SYNCLINAL (*συν, syn*, together; *κλινω, klino*, to incline or lean) axes; those that correspond in their inclination or *lean* the same way, — the opposite to anticlinal axes.

SYNTHERMAL (*συν, syn*, together; *θερμος, thermos*, warm); having the *same* degree of *heat*. Applied to the exterior and interior of the earth, which, in the case of our globe, are not *synthermal*, but differ greatly in temperature.

SYNTHESIS (*συν, syn*, together; *τιθημι, tithemi*, to put); *synthesis* forms substances by *putting together* the elements and then producing from them the desired matter. It is the opposite of analysis (*ανα, ana*, throughout; *λυω, luo*, to loose), which takes to pieces or dissolves any substance and ascertains the ingredients. *Synthesis* puts together; *analysis* looses or takes to pieces.

SYRINGODENDRON (*συριγγή, syrinx*, a pipe; *δένδρον, dendron*, a tree); a name applied by Count Sternberg to many species of Sigillaria (or fossil trees, marked as with a seal, *sigillum*) from the parallel *pipe-shaped* flutings that extend from the top to the bottom of their trunks.

sanguinolaria; bloody.

sarcinulatus, a, um; having a wallet or pack.

saxatilus, a, um; stony.

- scaber, a, um ;
 scabriculus, a, um ; } rough.
 scabridus, a, um ; }
 scabriusculus, a, um ; rather rough.
 scalaria ;
 scalariformis, e ; } ladder shaped.
 scaraboides ; beetle-like.
 scariosus, a, um ; scarious, having a dry shrivelled
 appearance.
 scopulum ; a rock.
 scrobiculatus, a, um ; pitted.
 scrotiformis, e ; pouch-shaped.
 scutatus, a, um ; }
 scutelliformis, e ; } buckler-shaped.
 scutiformis, e ; }
 scutiger ; } buckler shaped.
 scutularis ; }
 sectus, a, um ; cut.
 securiformis, e ; axe-shaped.
 sejunctus, a, um ; distinct.
 semiglobus ; half globe.
 semiplanus ; half smooth.
 semiplicatus ; half folded.
 semistriatus ; half striated.
 semiteres ; half taper.
 septatus, a, um ; partitioned.
 septuplicatus ; seven-folded.
 septosus, a, um ; partitioned.
 serialis, e ; in rows.
 seriatus ; linear ranked.
 sericeus, a, um ; silky.
 serpula ; }
 serpulus, a, um ; } creeping.

- serratus, a, um ; saw-like.**
signifer, a, um ; marked.
siliquaria ; husk.
sinistrorsus, a, um ; left-handed.
sinuatus, a, um ; marked with depressions.
solarium ; sun dial.
solen ; a channel, the razor shell.
solenoides ; solen (a shell) like.
solutus, a, um ; distinct.
spatulatus, a, um ; spatula-shaped.
speluncarius, a, um ; cavernous.
speciosus, a, um ; beautiful.
sphæroidalis ; spherical.
spicatus, a, um ; ear (of corn) like.
spiniger, a, um ; thorny.
spinipes ; thorn-footed.
spinulosus, a, um ; thorny.
spiratus, a, um ; having spires.
spirorbis ; spiral whorl.
squamosus, a, um ; scaly.
stigmatophorus, a, um ; mark-bearing.
stipularis, e ; straw mote shaped.
stomatia ; having a large mouth.
striato-punctatus, a, um ; spotted in striæ or parallel lines.
striatulus, a, um ; rather striated.
striatus, a, um ; disposed in ridges as between the flutings of a pillar.
strigosus, a, um ; strigose, covered with sharp oppressed rigid heads.
striolatus, a, um ; rabbeted or striated.
strombuliformis, e ; top-shaped.
stylophora ; mark-bearing.

subanomia ; rather irregular.

subaratus, a, um ; rather ploughed up, or the marks defaced.

subarmatus ; rather armed.

subcristatus ; rather crested.

subdeltoidea ; rather shaped like the letter Delta.

subdepressus, a, um ; somewhat depressed.

subteres ; rather taper.

subulatus, a, um ; awl-shaped.

sulcatus, a, um ;

sulcifer, a, um ; } furrowed.

sulcostomus, a, um ; having a mouth deeply furrowed.

T.

TABASHEER (Arabic word) ; a siliceous substance found in certain species of bamboo, possessing remarkable optical and physical properties.

TALUS (a term of fortification) ; the outside of a wall of which the thickness is diminished by degrees, or is technically said to *batter back*. In geology, talus is the sloping heap of débris or weather-worn fragments at the foot of a cliff.

TARSUS (*ταρσος*, *tarsos*, the first part of the foot) ; the *tarsal* bones of an Ichthyosaurus or Plesiosaurus are the two rows of bones or plates beyond the fibula and tibia in the *hind* paddle.

TAXONOMY (*ταξις*, *taxis*, order ; *νομος*, *nomos*, a law) ; the classification or putting things in their proper *order*.

TECHNICAL (*τεχνη*, *techne*, art) ; belonging to any art. The technical terms of various arts are collected in Crabb's Technicological Dictionary.

TECTIBRANCHIA (*tectus*, concealed ; *βραγχια*, *branchia*, gills and organs for breathing in water); the fourth order of Gasteropods (or belly-footed molluscs), in which the branchiæ are covered, as in the Bursatella.

TELEOSAURUS (*τελειος*, *teleios*, perfect ; *σαυρος*, *sauros*, a lizard); perfect or complete lizard; a new genus of fossil saurian or lizard, established by M. Geoffroy St. Hilaire, with a long and narrow beak, like the existing gavial, a species of crocodile. See Dr. Buckland's Bridgwater Treatise.

TELLURIUM (*tellus*, the earth); a metal so named.

TENTACULÆ (*tento*, to try); feelers as in actiniæ.

TEREDO (*τερηδων*, *teredon*, a borer); a boring worm termed *navalis*, naval from its boring ships. The Venerable line of battle ship, lost, a few years since, in Torbay, is already pierced like a honey-comb. The shield of the *Teredo* furnished Mr. Brunel with the idea for the shield used in the Thames Tunnel.

TERTIARY STRATA; a series of sedimentary rocks, with characters which distinguish them from the two other great series of strata, the *secondary* and *primary*, which lie beneath them.

M. De la Beche has used the term *supercretaceous* group for tertiary in his highly valued work, a Manual of Geology, which term (*super*, above; *creta*, the chalk) implies that the strata are superior in position to the chalk. Tertiary, secondary, and primary are terms not quite obsolete, though likely to become so. Mr. Lyell has arranged the tertiary system into four principal groups, each characterised by the relative pro-

portion of recent and extinct species of shells which they contain:—1. The *Pliocene* (more *new* or recent) newer; and, 2. Older. 3. The *Miocene* (denoting less recent). 4. The *Eocene* (the dawn of recent), in allusion to the first appearance of recent species.

TESTACEA (*testa*, a shell); molluscous animals, which have a shelly covering, as the limpet, oyster, &c.

TETRACAULODON (τετρα, *tetra*, four; χαλαω, *chalaō*, to send forth, loosen, or set at liberty; οδους, *odous*, a tooth); a fossil extinct animal, of the miocene period, of the tertiary formation, allied to the mastodon; so called from its having *four projecting teeth*.

TETRAGONOLEPIS (τετρα, four; γωνη, *gone*, angle; λεπικ, *lepis*, a scale); *tetragonal scaled*. A genus of fossil fishes of Agassiz.

TETRAPTERUS (τετρα, *tetra*, four; πτερον, *pteron*, a wing or fin); *four-finned*. A genus of fossil fishes of Agassiz.

THALASSIOPHYTA (θαλασσα, *thalassa*, the sea; φυτον, *phyton*, a plant); marine plants.

THECODONTOSAURUS (θηκη, *theke*, a repository; οδων, *odon*, a tooth; σαυρος, *sauros*, a lizard); *chambered tooth lizard*. A name given to an extinct saurian.

THERMAL (θερμη, *therme*, heat) waters; hot-waters.

THERMO-ELECTRICITY (θερμος, *thermos*, warm); electricity developed by heat.

THIN OUT; signifies the gradual approach of the two surfaces of strata till they meet, when they are said to *thin* out, or disappear.

- THRISOPOUS** (θριξ, *thrix*, bristles, hair; οψις, *opsis*, look); *bristly*. A genus of fossil fishes of Agassiz.
- THYELLINA** (θυελλα, *thyella*, a rushing storm); a genus of fossil fishes of Agassiz. A species is named *prisca*, or old.
- THYLACINUS** (θυλαξ, *thylax*, a bag); a scientific name for the largest of the carnivorous marsupial (bag or purse) animals, about the size of a wolf, found only in Van Diemen's Land.
- THYLACOTHERIUM** (θυλαξ, *thylax*, a bag; θηριον, *therium*, a beast); *pouch-beast*. A name given to a marsupial animal (or one with a pouch like the kangaroo) found at Stonesfield.
- THYNNUS** (Lat. Tunny); a genus of fossil fishes, named by Agassiz. There is a species, the *T. propterygius*, or *fore-finned*.
- TIBIA** (Lat. the greater bone of the leg); the bone or plate which, with the fibula, forms the first row in the hind paddle of the Ichthyosaurus after the femur. The fibula and tibia of the *hind* paddle correspond with the radius and ulna of the fore paddle.
- TILGATE FOREST**; a celebrated tract of the Wealden formation in Sussex, where the Hylæosaurus is found.
- TINCA** (Lat. for Tench); a genus of fossil fishes of Agassiz; a species is called *leptosoma* (λεπτος, *leptos*, slender; σωμα, *soma*, a body); slender-bodied.
- TITANIUM** (*Titans*, of fable); a metal fancifully named by Klaproth.

- TOAD STONES**; a provincial term, given to trap rocks, from the aspect of the prevailing amygdaloid.
- TOISE**; a French measure of six Paris feet, or 2 yards, 0 feet, $4\frac{1}{2}$ inches, English.
- TOLIAPICUS** (*tolus*, a pestle); pestle-like. A species of the Placoid genus of fishes, Myliobates, remarkable for its bony palates.
- TOR**; ancient name of eminences, such as the Tor at Glastonbury, Hay Tor, Brent Tor.
- TOXODON** (*τοξον*, *toxon*, a bow; *οδον*, *odon*, a tooth); *bow-shaped*, or *bent tooth*. The generic term of a gigantic quadruped, approaching, in character, to the pachydermata. The specific name, *Platensis*, indicates the locality of its discovery, La Plata, in a feeder of the Rio Negro.
- TOXOTES** (*τοξοτης*, *toxotes*, a bowman); a genus of fossil fishes of Agassiz; a species is named *antiquus*, or ancient.
- TRACHELIPODS** (*τραχηλος*, *trachelos*, a neck; *πους*, *pous*, a foot); creatures which have the feet, or locomotive apparatus, on the lower surface of the neck. By means of this, Trachelipods crawl like the common garden snail.
- TRACHINOTUS** (*τραχυς*, *trachys*, rough; *νωτος*, *notus* the back); *rough back*. A genus of fossil fishes of Agassiz. A species is named *tenuiceps*.
- TRACHINUS** (*τραχυς*, *trachys*, rough); a genus of fossil fishes of Agassiz.
- TRACHYTE** (*τραχυς*, *trachus*, rough); a rock so called from being remarkably *rough* to the touch. A variety of lava essentially composed of glassy felspar, and frequently having detached crystals

of felspar in the body of the stone, giving it the structure of porphyry. It sometimes contains hornblende and augite; and when these last predominate, the trachyte passes into the varieties of trap called greenstone, basalt, dolorite, &c.

TRANSITION ROCKS (*transeo*, to pass on, to change from one thing to another); so called because it was assumed, as Dr. Mantell says, that they had been formed when the surface of the earth and seas were *passing into* a state fit for the reception of organised beings. They are strata altered by the effects of heat under high pressure. The transition rocks lie above the primitive rocks, and are more or less stratified; they contain the remains of animals, corals, and plants. Belonging to the transition series, is the Silurian system, about 8000 feet in thickness, including the Ludlow, Wenlock, or Dudley, Caradoc and Llandeilo rocks, and the Cumbrian, or Cambrian, slate system.

TRANSMUTATION (*trans*, beyond; *mutatio*, a change); a change of place, and of one thing into another; a term adopted by Lamarck to express his hypothetical views of the derivation of existing species from preceding species, by successive *transmutations* of one form of organisation into another form, independent of the influence of any creative agent. See Dr. Buckland's Bridgwater Treatise, vol. i. p. 585.

TRAP and TRAPPEAN ROCKS (Swedish, *trappa*, a stair); a volcanic rock, so called from its tendency to sever or split into *steps* or *stairs*. Trap is composed of felspar, augite, and hornblende.

Various proportions of these simple mineral ingredients give rise to varieties which have received distinct appellations, such as basalt, amygdaloid, dolomite, greenstone, &c.

TRAVERTIN (called by the ancients *Lapis Tiburtinus*, or Tiburtine stone, as it was and is formed in great quantity by the river Anio, at Tibur, near Rome. Some suppose *travertin* to be an abbreviation of *trasteverino*, from *transtiburtinus*, beyond Tibur); a concretionary limestone, usually hard and semi-crystalline, deposited from water holding lime in solution. A less solid form is called *tufa*.

TRIGONOCERUS (*τριγωνος*, *trigonos*, triangular; *κερας*, *ceras*, a horn); *triangular-horn*. A term applied to a species of fossil cervus or stag.

TRILOBITE (*τρεις*, *treis*, three; *λοβος*, *lobos*, a lobe); a crustaceous animal, found in the transition limestone of Dudley, near Birmingham, often called the Dudley fossil, as well as in Bohemia, &c.

TRIONYX (*τρεις*, *treis*, three; *ονυξ*, *onyx*, a claw); *three clawed*. A species of fossil tortoise.

TRIPOLI POWDER (Tripoli, whence first imported); used for polishing fossils, &c. It is itself the remains of fossil insects. See *Polierschiefer*, and *Infusoria*.

TRISTYCHIUS (*τρεις*, *treis*, three; *στιχος*, *stichos*, a row); *triple-row*. A genus of fossil fishes, of which the *ichthyodorulite* is found.

TRITORES (Latin) grinders, or palates, called Leaches, *Bufonitæ*, &c.

TROGONTERIUM (*trogo*, to eat; *therium*, a beast);

fossil animal so called, found near Taganrog, sea of Azof.

TROPHI (*τρεφω*, *trefho*, to nourish); organs which form the mouth, consisting of an upper and under lip, and comprising the parts called mandibles, maxillæ, and palpi.

TROPÆUM (*τρεπω*, *trepo*, to turn); *twisted* or *turned*.

A term applied to some species of fossil cephalopoda, which are allied to Crioceratites, &c.

TUBERCLE (*tuberculum*, a little tuber); a small projection or pimple.

TUBEROSE (*tuber*, a toad stool, a swelling); having round bumps.

TUBICOLA (*tuba*, a trumpet, or tube; *cola*, an inhabitant); *tube-dwelling*, a class of Annelidæ, so named by Cuvier, of which the Amphitrita is an example.

TUFA, or **CALCAREOUS TUFA** (Italian term); a friable earthy deposit from calcareous springs. The more solid form is *travertin*.

TUFF, or **TUFA**, **VOLCANIC** (to distinguish it from calcareous tufa); an Italian name for a variety of volcanic rock of an earthy texture, seldom very compact, and composed of an agglutination of fragments of scorix, and loose matter ejected from a volcano.

TUNGSTEN (Swedish *tung*, heavy; *sten*, stone); a metal so named from the *density* of its ores. Also called Wolfram, from a mineral of that name, which is a tungstate of the oxides of iron and manganese.

TURBID (*turbidus*, troubled) waters; foul waters.

TURBINATED (*turbo*, the winding of a serpent) shells; winding screw-like shells.

TURQUOISE (Turkey stone, from being first brought thence); a well-known precious stone, supposed to be the tooth of the mastodon coloured with sulphate of iron.

TURRILITE (*turris*, a tower; *lithos*, stone); a shell which resembles a winding tower.

TURRITELLA (Lat.); little tower, name of a shell.

tabulatus, a, um; boarded, planked.

tænianus, a, um; tape worm shaped.

tenuifasciatus, a, um; slightly banded.

tenuis, e; slight.

tenuispina; slender thorn.

terebra; a borer, or auger.

Terebra; a vice.

terebratus, a, um; bored.

teres; terete, or taper.

tessellatus, a, um; tessellated.

Testacella; a little shell.

tetraedra; four-sided.

tetrasticha; in four rows.

textilis, e; woven.

tomentosus, a, um; covered with dense, rigid, short hairs.

tonsipluma; having the plumage shorn close.

tortuosus, a, um; twisted.

torulosus, a, um; knotted.

triacontadactylus, a, um; thirty fingered.

trichotomus, a, um; divided into three.

Tridacna; thrice indented.

trifidus; trifid, divided into three.

trifurcatus; three forked.

trigonellaris; triangular.

triqueta; triangular.

trochlearis, e; pulley-shaped.

truncatus; cut short.

tubæformis; trumpet-shaped.

tuberculatus, a, um; covered with tubercles or warts.

tubipora; organ-piped.

tubularis; hollow like a pipe.

turbinatus, a, um; top-shaped.

turbinellus, a, um; little top shaped.

turbinoïdes; top-shaped.

U.

ULNA (Lat. the undermost bone of the cubit); the bone or plate which, together with the radius, forms the first row, after the humerus, in the *front* paddles of an ichthyosaurus and plesiosaurus.

ULODENDRON (*υλη*, *hule*, wood; *δενδρον*, *dendron*, tree); *wood tree*. A genus belonging to a group of extinct fossil plants, all of which have *scars arranged* in vertical rows. The stem is not furrowed, but covered with deep oval or circular cavities ranged in two vertical rows, on opposite sides of the trunk, in some species nearly five inches in diameter, which are supposed to indicate the insertion of large cones.

UNDULATING (*unda*, a wave); resembling waves, such as a country alternately hill and dale.

UNGUICULATUS (*unguis*, a claw); *claw-like*. A species of the genus of fossil fishes, the lepidotus.

UNGULATE (*ungula*, a hoof); having a hoof. An *ungulate* quadruped.

UNIVALVE (*valva*, a folding door); the shell of one piece, as the limpet.

URANIUM (*Uranus*, the planet); a metal so named from being discovered in 1789, the same year as Uranus.

URSUS (Lat.) a bear; spelæus (*σπηλαιον*, *spelæion*, a cave); that lives in caves; — priscus (Lat.) original; — arctoïdeus, northern.

umbella; an umbrella.

umbilicatus, a, um; navel-like.

umbonatus, a, um; bossed.

umbraculiformis, e; umbrella-shaped.

umbrosus, a, um; shadowed.

uncatus, a, um; hooked.

uncinatus, a, um; hooked.

undatus, a, um; wavy.

undosus, a, um; } in waves, wavy.

undulatus, a, um; }

unguiformis, e; claw-shaped.

unicarinatus, a, um; having one ridge or keel.

unicolor; one-coloured.

unilineatus, a, um; one-lined.

uniplicatus, a, um; once-folded.

urceolatus, a, um; pitcher-like.

utricularis, e; bag-like.

V.

VALLEYS OF ELEVATION; those which seem to have originated in a fracture of the strata, and

- a movement of the fractured part upwards. See Geol. Manual, p. 31., for a section of one.
- VANADIUM** (*Vanadis*, a Scandinavian deity); a metal discovered in Sweden.
- VARIOCOSTATUS** (*varius*, various; *costatus*, ribbed); differently ribbed. The name expresses the remarkable *change* in the character of the *ribs*, near the outer termination of the air-chambers.
- VASCULAR** (*vasculum*, a little vessel) structure; full of little vessels.
- VEINS, MINERAL** (*vena*, a vein); cracks in rocks resembling the veins in an animal filled up by substances different from the rock, either earthy or metallic.
- VERD ANTIQUE** (Fr.); ancient green; a mixture of limestone and serpentine.
- VERMIFORM** (*vermis*, a worm; *forma*, shape); *worm-shaped*. Casts or impressions of vermiform bodies have been found on thin flagstones.
- VERTEBRA** (*verto*, to run); a turning bone, such as are those of the back bone.
- VERTEBRATED ANIMALS**; those which have a spinal column of vertebræ.
- VERTICAL** (*vertex*, top of the head); directly over head.
- VESICLE** (diminutive of *vesica*, a bladder); a cavity, like a little bladder.
- VESICULAR**; bladder-like, or full of cells or vesicles.
- VILLOSUS** (*villus*, hair); *shaggy*. A species of the fossil fish mallotus.
- VISCOSITY** (*viscus*, bird lime); the quality of being adhesive.

VITRIFICATION (*vitrum*, glass; *fio*, to become); the conversion of a body into glass by heat.

VOLCANIC BOMBS; detached masses of lava shot out by volcanos, which, as they fall, assume rounded forms, like *bomb-shells*.

VOLCANIC FOCI (*focus*, fire place); the subterraneous centres of action in volcanos, where the heat is supposed to be in the highest degree of energy.

VOLTZIA (Voltz of Strasburg); a genus of coniferæ, named in honour of the above gentleman.

VOMER (Lat. ploughshare, from the shape of its head); a genus of fossil fishes of Agassiz. *Longispinus*, or *long-spined*, is the name of a species.

.vagens; wandering.

vagina; a sheath.

Vaginella; a little sheath.

varians; changeable.

varicosus, a, um; varicose, having swollen veins.

variolaris, e; spotted with pimples.

vascularis, e; vascular, having little vessels.

vasulites; little vase shaped.

velamen; covering, or veil.

velutinus, a, um; velvety.

venosus, a, um; venous, full of veins.

ventricosus, a, um; bellying.

ventroplanus, a, um; smooth bellied.

venustus, a, um; fair.

vermicularis, e; worm-shaped.

vertebralis, e; vertebra-like.

verticillatus, a, um; whorled.

verus, a, um; true.

- vesicularis, e ; } bladder-like.
 vesiculosus, a, um ; }
 vetustus, a, um ; ancient.
 vibicatus ; whealed.
 vimineus, a, um ; osier-like.
 violascens ; approaching to a violet colour.
 virgatus, a, um ; twig-shaped, rod-like.
 virgula ; a rod or twig.
 virgulatus, a, um ; rod-shaped.
 vitreus, a, um ; glassy.
 vittatus, a, um ; banded, or bound with a fillet.
 vomer ; a ploughshare.
 vulgatus ; common.
 Vulsella ; pincers.

W.

WACKE (a German provincial miner's term for a rock nearly allied to basalt, of which it may, says Mr. Lyell, be regarded as a soft and earthy variety. Mantell says it denotes a hardened conglomerate.

WARP ; a local name for the muddy sediment of the Humber.

WAVELLITE (Dr. Wavel) ; a mineral called after its discoverer, found near Barnstaple.

WEALDEN ROCKS (*weald*, from the Saxon *wald*, a wood) ; so called from the Weald of Sussex. They occur beneath the lower green sand. In French, *argile Veldienne* (Al. Brong.).

Dr. Mantell has given four subdivisions of this extensive system of deposits of the secondary rocks : — 1. *Weald clay* and beds of shelly lime-

stone, called *Sussex* or *Petworth marble*. 2. *Hastings* beds and calciferous grit, called *Tilgate-stone*. 3. The *Ashburnham* beds. 4. The *Purbeck* beds and limestone, called *Purbeck marble*, and the petrified *forest of Portland*.

WHETSTONE PITS; narrow, but very long passages, east of the valley of Exeter. The whetstones for whetting scythes are hewed out from nodules of stone found in the green sand. No workmen are to be found there above forty-four years of age; they generally die at about forty-two. Fine encrinites are found there. See De la Bêche's Report of the Geol. of Cornwall, Devon, &c.

WITHERITE (Dr. Withering); carbonate of barytes named after Dr. W.

WOBURN SAND OR IRON SAND; a member of the lower green sand, so named from the locality in Bedfordshire.

WOLDS (Saxon); woodless hills.

WYCH OR WICH (British or Celtic term); a mark to the geologists, as the termination of towns and villages in England, where salt springs exist, as Droitwich, Middlewich, &c. in Cheshire, and Worcestershire.

“ But that which vex'd her most was, that the Peakish cave
Before her darksome self such dignity should have;
And th' *wyches* for their salts such state on them should
take.”

DRAYTON's *Polyolbion*, iii. p. 711.

Places such as Norwich and Ipswich, though possessing no salt springs, are supposed to have been so named from the making there of *salt* from salt water. See **SALT SPRINGS**.

X.

XIPHIAS (ξίφος, *xiphos*, a sword); the sword-fish.

XIPHODON (ξίφος, *xiphos*, a sword; ὄδων, *odon*, a tooth); *sword-tooth*. A species of the fossil fish oxyrhina.

Z.

ZECHSTEIN (a German miner's term); a magnesian limestone, of the red sandstone group.

ZEOLITE (ζεω, *zeo*, to boil; λιθος, *lithos*, a stone); a simple mineral, some of whose varieties swell and *boil* up when exposed to the blow-pipe. The family of zeolites includes stilbite, mesotype, analcime, and some others found in the trap or volcanic rocks.

ZOOPHYTES (ζωον, *zoon*, animal; φυτον, *phyton*, plant); *animal plants*, such as corals, sponges, &c., so called because, while they are the habitation of animals, they are fixed to the ground, and have the forms of plants.

THE END.

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